PERU CAPSTONE 2022

LITHIUM:
MINERAL OF THE FUTURE

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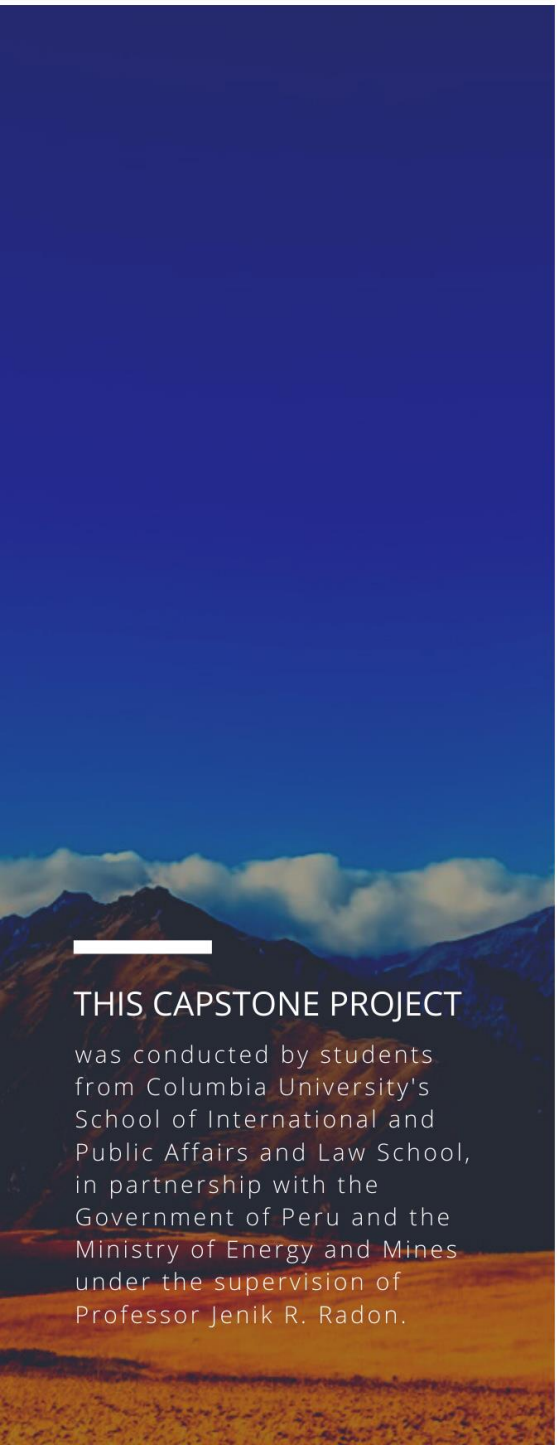

THIS CAPSTONE PROJECT

was conducted by students from Columbia University's School of International and Public Affairs and Law School, in partnership with the Government of Peru and the Ministry of Energy and Mines under the supervision of Professor Jenik R. Radon.

2022

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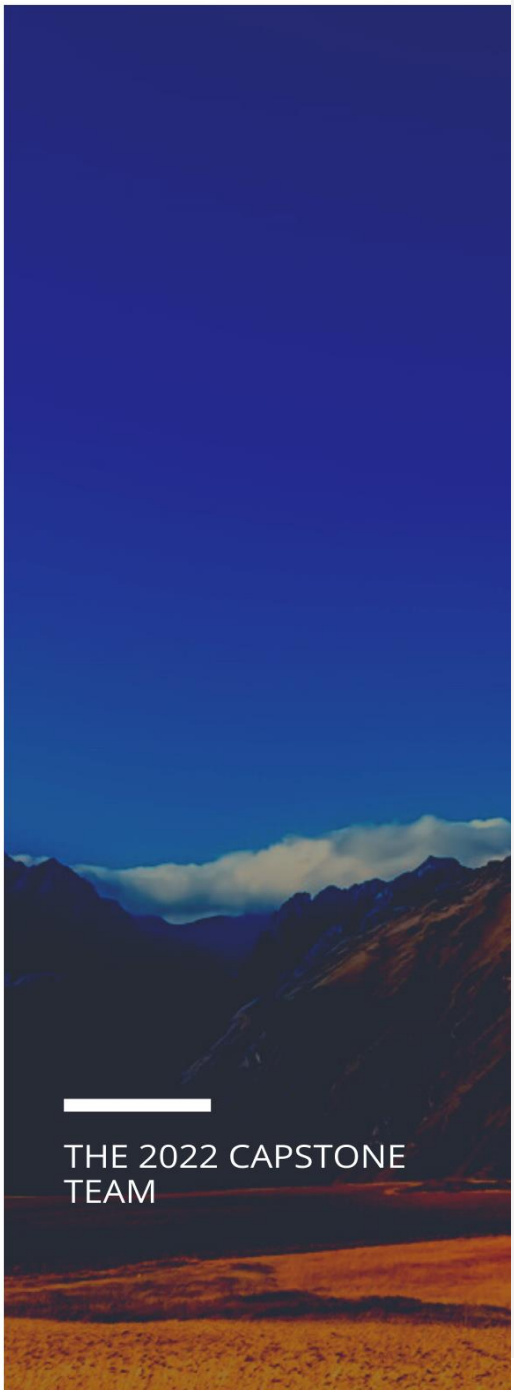
CONTENTS

LETTER FROM THE TEAM

Amid the climate crises, Peru has found itself in a central position to aid and capitalize on the world's need for lithium for the energy transition. This Columbia Capstone team has had the privilege to work alongside the Ministry of Energy and Mining (MINEM) as it strives to align its mining industry with the development goals of the nation. The focus of this report is to provide information and suggestions on how Peru can utilize its lithium resources in a way that is environmentally friendly, socially and politically impactful, and economically multiplying.

As a team, we have based our report on the importance of Mining Vision 2030, eight years of consultation with MINEM, and advice from global experts and researchers in the field. In this report, we hope to elevate the economic potential hidden within Peru's lithium resources, as well as the environmental, social, and political risks that may arise in the process.

Peru is not the only country in the region which has discovered the new "white gold". Global agreements, national regulations, and economies will likely begin shifting, and quickly. It is our hope that the information provided will help MINEM capitalize on its resources as soon and efficiently as possible, without unwittingly contributing to environmental, social, or political harm in the local communities that surround future lithium mines.



ACKNOWLEDGEMENTS

We extend our most sincere thanks to those professionals and experts who took the time to speak with and guide us through this process:

From the Government of Peru:

Evelyn Contreras, Ministry of Energy and Mines
Kensy Mayta Samaniego, Viceminister of Energy and Mines
Karin Acosta Pablo, Legal Specialist, Ministry of Energy and Mines
Miguel Antezano, Ministry of Energy and Mines
Mayra Figueroa, Director of Sustainability and Mining Organization, Ministry of Energy and Mines
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Luis Miguel Incháustegui, Mining Expert and Consultant, Peru
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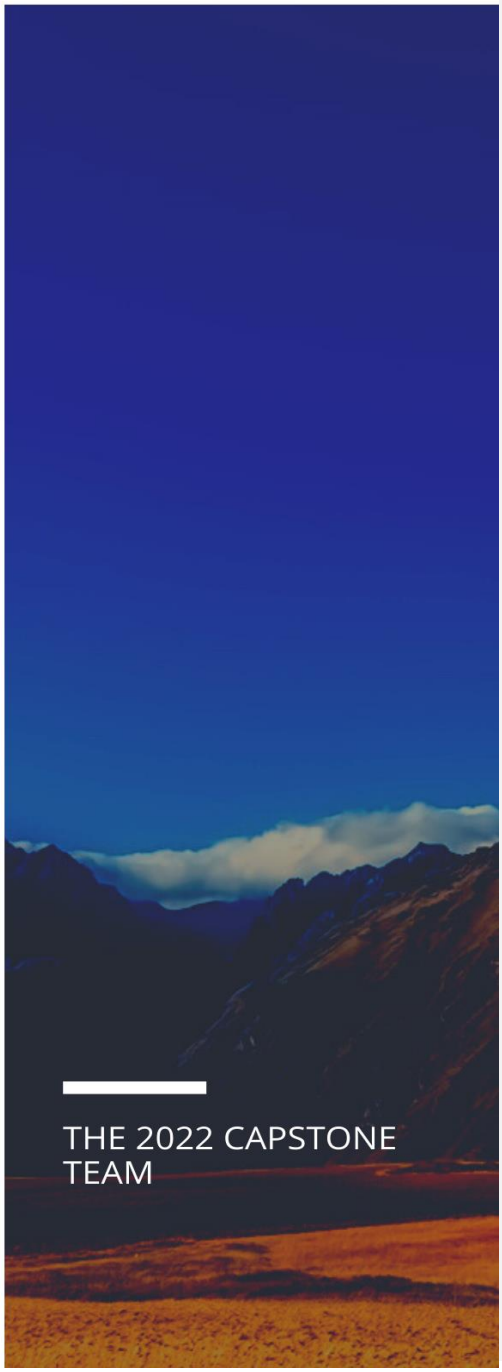
Mario Huapaya, Senior Consultant, Special Group for Mining, Inter-American Development Bank

LIST OF ABBREVIATIONS

ACI	ACI Systems
ANA	National Water Authority
ADTR	Technical Board of Irrigation District
CAT	Convention Against Torture
CBD	United Nations Convention on Biological Diversity
CDA	Community Development Agreement
CEDAW	Convention on the Elimination of Discrimination Against Women
CEPLAN	National Center for Strategic Planning
CMEC	China Machinery Engineering Corporation
CONADIB	National Commission for Biodiversity
CRC	Convention on the Rights of the Child
GEL	General Environmental Law
EIA	Environment Impact Assessment
ESIA	Environmental and Social Management Instrument
EU	European Union
ICCPR	International Covenant on Civil and Political Rights
ICESCR	International Covenant on Economic, Social and Cultural Rights
ILO	International Labour Organization
INGEMMET	Mining and Metallurgical Geological Institute
IRMA	Initiative for Responsible Mining Assurance
LCE	Lithium Carbonate Equivalent
Li-Ion	Lithium Ion
MINEM	Ministry of Energy and Mines
NGO	Non-Governmental Organization
OEFA	Organization of Supervision and Environmental Assessment
OSINERGMIN	Supervisory Agency for Energy and Mining Investment
MRE	Mineral Resource Estimation
MT	Metric Tonnes
NEPC	Nordic Environmental Protection Convention and Protocol



OECD	Organisation for Economic Co-operation and Development
PEA	Preliminary Economic Assessment
PCC	Peruvian Constitutional Court
SEA	Strategic Environmental Assessment
SEIA	National Economic Impact Assessment System
SERNANP	National Service for State-Protected Natural Areas
SINANPE	National System of Natural Areas Protected by the State
SQM	Sociedad Quimica y Minera de Chile SA
SUNAFIL	National Superintendence of Labor Inspection
SUNAT	National Superintendency of Customs and Tax Administration
UNSR	United Nations Special Rapporteur of the Human Rights Council
USGS	United States Geological Survey
PCC	Peruvian Constitutional Court
SEA	Strategic Environmental Assessment
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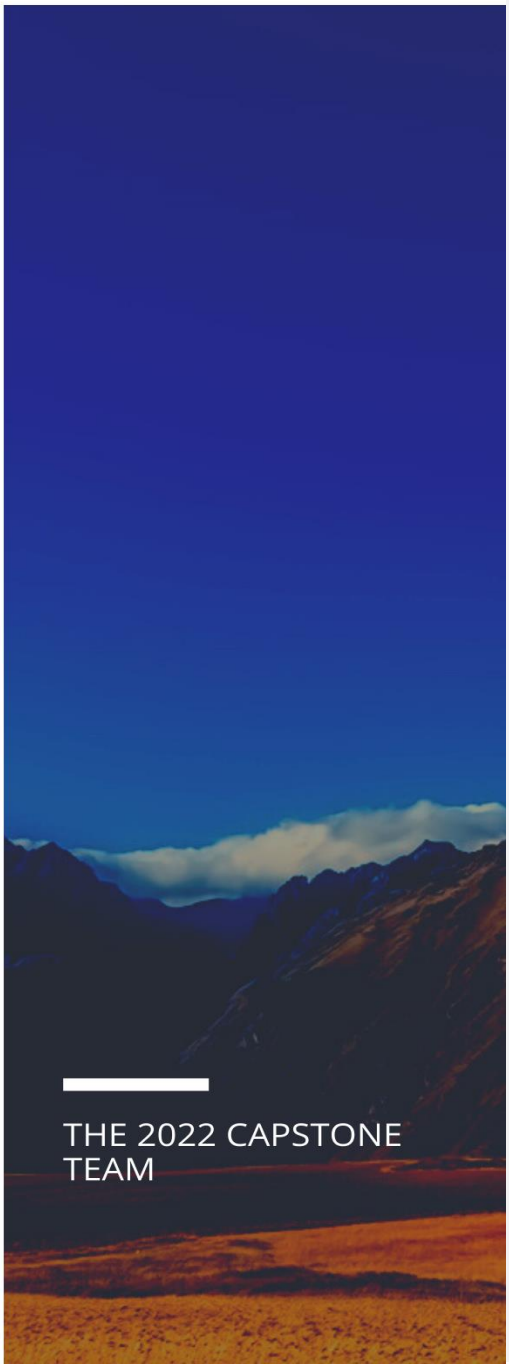
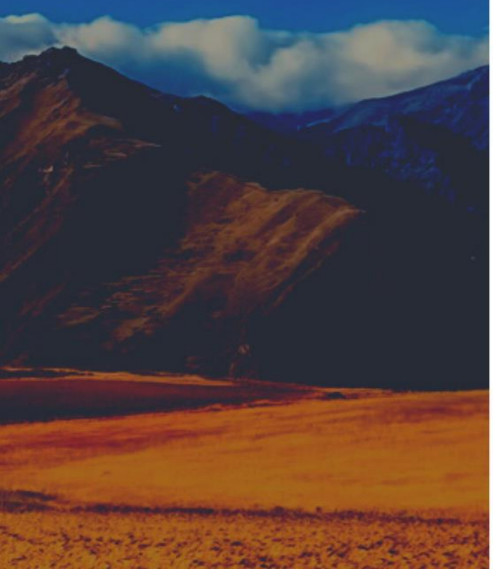
SUNAFIL	National Superintendence of Labor Inspection
SUNAT	National Superintendency of Customs and Tax Administration
UNSR	UN Special Rapporteur of the Human Rights Council
USGS	US Geological Survey
UN	United Nations
UDHR	United Nations Declaration of Human Rights
UNGPs	United Nation Guiding Principles for Business and Human Rights
WiM Peru	Women in Mining Peru
YLB	Yacimientos de Litio Bolivianos



PREVIOUS CAPSTONES



2021

TAILINGS DAMS: A DISASTER WAITING TO HAPPEN

2020

COLOMBIA AND PERU: SECURING COMMUNITY ACCEPTANCE IN NATURAL RESOURCE RICH AREAS

2019

MINING VISION 2030: MAKING IT A REALITY

2018

COMMUNITY PARTNERSHIP AGREEMENT: SECURING COMMUNITY CONSENT IN MINING AREAS IN PERU

2017

MINING, SOCIAL LICENSE AND CONFLICT PREVENTION

2016

THE PERUVIAN MINING SECTOR: EXPLORING ISSUES RELATED TO SOCIAL LICENSES, CORRUPTION AND THE TRANS- PACIFIC PARTNERSHIP TREATY

2015

MINING IN PERU: BENEFITTING FROM NATURAL RESOURCES AND PREVENTING THE RESOURCE CURSE

2014

COLOMBIA: EXTRACTIVES FOR PROSPERITY

EXECUTIVE SUMMARY

INTRODUCTION

Peru is not the only country in the region which has discovered the new "white gold." Global agreements, national regulations, and economies will begin shifting, and quickly. It is our hope that the information provided will help MINEM capitalize on its resources as soon and efficiently as possible, without unwittingly contributing to environmental, social, or political harm in the local communities that surround future lithium mines. This executive summary contains an easy-reference list of all recommendations made in this report.

PART 1: ENVIRONMENTAL IMPACTS OF LITHIUM MINING

Before Peru begins lithium extraction, the Columbia Capstone team proposes the following recommendations based on our conversations with regulatory officials, industry experts, and researchers. Of particular concern when mining hard-rock lithium is the environmental consequences to miners, surrounding populations, and local communities. Health risks due to exposure to radioactive uranium, water scarcity, and threats to the region's biodiversity are of particular concern. We recommend that Peru uses lithium to strengthen its position as a country committed to fighting the impacts of climate change, while protecting the health and safety of its residents. The below recommendations highlight some of the environmental concerns that Peru faces in approving a lithium mining project and recommended action to ensure that lithium discovery is not a resource curse for Peru, but rather, a discovery that stimulates safe and beneficial international investment.

RECOMMENDATIONS:
Establish consistent norma tecnicas
When writing and establishing policies, specific and practical guidance must be initiated to take special care for radioactive materials extracted alongside lithium, particularly uranium. The government should implement safe mining regulations in keeping with Mining Vision 2030 priority #2: improved practices in water resource management. Particularly, MINEM should consult with domestic and international experts in the field, not just from an environmental perspective, but also from an economic and sociopolitical perspective, to see the feasibility and effectiveness of imposing this requirement.
Advanced planning across national administration authorities
The importance of this discovery and its impact on the environmental, social, and economic landscape of Peru necessitates high attention and advanced planning to maximize benefits and avoid the serious environmental concerns of Peru's neighbors. MINEM should work with the CEPLAN to develop an institutional plan for the execution of these strategies.
Establish a Code of Practice for Radioactive Waste

Create an internationally accepted code of practice for radioactive waste management in Peru. Do not approve Macusani Yellowcake's Macusani Project or Falchani Project until concrete internationally accepted standards for safely disposing of radioactive material is established and has been approved by recognized international experts and authorities on uranium mining safeguards and radioactive waste management.
Consult Outside Experts to form Regulations on Uranium
This is the first time MINEM has worked on a project involving radioactive waste. MINEM should consult outside experts with experience working on these sensitive materials to establish their regulations. At a minimum, a radiation management plan and a radioactive material waste management plan should be established to ensure mining projects meet internationally accepted radioactive material standards. Look to Australia's Code of Practice for Reference. This will further allow for international standards around uranium mining to be established.
Determine how much lithium is in Peru
MINEM should work with CEPLAN and SINANPE in developing a MRE system; adopt MRE best practices from international institutions such as the USGS and align Peruvian data with data from these institutions. The government may take samples to establish thorough knowledge of any uranium deposits in the mine.
Draft a regional environmental treaty
Latin American nations that are developing lithium should start discussions for a lithium mining environmental protection treaty to prevent capitalization of foreign investments on business-friendly but environmentally hostile lithium regulatory schemes. The components of the treaty are further expounded in *Appendix B*.
Conduct a comprehensive hydrogeological analysis
A total site wide detailed hydrogeological study needs to be completed to determine the ground water levels and how these may impact water inflows into the pits, geotechnical stability issues and potential impacts on site wide infrastructure.
Conduct a detailed hydrogeological study in Carabaya province
The government should determine the groundwater levels and how they may affect water inflows into the pits, geotechnical stability of the bedrock, and longevity of site wide infrastructure, then use this survey to monitor and record water sources in mining regions.
Monitor real-time water usage in mines
The government should monitor mining operations to install a device that records water usage prior to the commencement of the project and ensure that companies comply by making this a requirement in the EIA. This will allow MINEM to collect baseline data and make decisions on regulations in real time based on water usage.
Investigate water treatment options
Ensure that the water being used is recycled, to the extent that is possible in order to not exacerbate water scarcity issues in the region.
Properly enforce mining regulations on water pollutants
Increase decentralization to regional level actors for implementation and enforcement. The Peruvian government should consider transferring environmental enforcement powers and functions from the central government to local and regional governments but keep a right of review in the central government. To successfully implement decentralization and increase community involvement, the government should build the institutional capacity of local and regional governments by increasing funding, training, and expertise to properly deal with mining-related responsibilities.
Improve practices in water resource management pursuant to Mining Vision 2030

The government should require regular check-ups on tailings facilities to ensure that: 1) groundwater is uncontaminated by process water; 2) process water meets acceptable concentrations of heavy metals; and 3) raw water usage is not exceeding proposed quantities.
Require dry stack tailings in mining waste disposal
In lithium mining concession agreements, the government should consider requiring dry stack tailing dams in all lithium mining projects.
Require the conduct of a land survey of the Falchani concession area
Prior to lithium exploitation, the government should require the preparation of an independent survey of the land both within and surrounding the Falchani concession area. At a minimum, this survey should determine the base wildlife populations, soil health, biomass density, and aquifer levels. A comprehensive survey must be realized to understand how mining operations, if permitted to proceed, impact the surrounding ecosystem. This can be done in conjunction with the Ministry of Environment and Strategic Development of Natural Resources subdivision and local community members. Starting with quantifiable metrics will enable ecological impact to be measured according to the standards set by the Chartered Institute of Ecology and Environmental Management.
Evaluate current policies
The 1997 Law on the Conservation and Sustainable Use of Biodiversity instructs each ministry to introduce and implement sectoral programs and plans for preserving biodiversity in its agriculture, education, health, roads, and transportation. The National Commission for Biodiversity (CONADIB) and National Environmental Council (CONAM) should conduct a thorough evaluation of policies and frameworks developed by ministries within Puno to this effect.
Create buffer zones between mines and invaluable ecosystems
Like Australia, the government should impose regulations that mining equipment, vehicles, and heavy machinery can only be transported through the least disruptive route to the mine, as to not interfere with local communities, ecosystems, and agriculture.
Ratify the United Nations Convention on Biological Diversity (CBD)
Encourage the Peruvian Legislature to ratify the CBD. This would allow Peru to receive funding from the UN to enforce its biodiversity goals and maintain rich flora and fauna in the Puno region.
Improve communication between decentralized agencies.
The decentralization of environmental policies requires greater communication between sectoral agencies for improved implementation and accountability. MINEM, the Ministry of Environment, SERNANP, and SINANPE must communicate national goals and evaluate mechanisms for implementation of the action items determined by each agency. A comprehensive system for monitoring and reviewing National Biodiversity Strategies and Action Plan (NBSAP) implementation should be introduced through cooperation with these agencies.

PART 2: POLITICAL & SOCIAL CONSIDERATIONS IN LITHIUM MINING

Our recommendations addressing socio-political concerns are founded on the principles of transparency, accountability, and trust. Peru must develop a lithium mining policy that safeguards the rights of affected local communities, enhances their social, cultural, and economic well-being, and continuously addresses their needs. It is also critical for the government and private sector to secure and maintain community acceptance of a project through open and continuous engagement. Moreover, Peru must craft and enforce lithium-specific mining regulations that are aligned with its obligations under international human rights

law, and which address the most prevalent human rights issues observed in other types of mining in the country.

RECOMMENDATIONS:
Require liaison officers from the national government or a third-party NGO to monitor community sentiments
As the relationship between the mining company and communities change over the course of the lithium and uranium mining projects, it will be important for the government to be aware of any changes in community sentiment. This will put the government in a position to intervene in the case of discontentment or disagreement. These NGOs or experts can relay the results of their assessments to the regional government, who should use this knowledge when advocating for their citizens to the national government as it negotiates with mining companies.
Adopt similar or suggested regulations which enforce community agreements
Community agreements are only as valuable as they are enforceable. See *Appendix C* for recommended regulations which the government may consider adopting to create a legally enforceable regime for the community agreements. The draft regulation is patterned after the World Bank Group Community Development Agreement Model Regulations & Example Guidelines Report and has been adapted to the development and regulatory requirements of the Peruvian government. This will give both the community and mining companies confidence that their agreements will be monitored, enforced, and that they can bring legal action if any provisions of the contract are breached.
Regional governments should take a leading role in advocating for citizen's wishes for local mining projects
Regional governments have made clear their desire for decentralization in Peru's government structure. This is based in the idea that regional governments have more knowledge of the local community relationship with mining companies. Regional governments are therefore in the most effective spot to advocate for the needs of their citizens around conflicts and concerns with the mining projects.
The government of Peru should sign on to the Voluntary Principal Initiative
The Voluntary Principal Initiative is working to develop best practices in mining and security safety. As a part of this initiative, Peru can be at the forefront of mining and security safety. However, this is a baseline and Peru should strive for even more stringent practices.
Encourage, perhaps through tax incentives, companies mining lithium in Peru to join the Voluntary Principal Initiative
If the companies are members of the Voluntary Principal Initiative, the government of Peru and the companies employing its citizens can enhance their collaborative efforts to promote the safety and security of both the local communities, mining staff, and the mines.
Ensure companies have private security, and that private security has human rights training and a solid human rights background
It is important that mining companies use private security companies that do not overlap with the police or military force for the government of Peru. Private security companies can be mandated to be trained in conflict de-escalation.
Ensure mining companies have human rights policies, and a solid human rights background
It is becoming more common for private companies to have human rights policies that are aligned with the UNGPs. By vetting mining companies to ensure they have these policies, Peru will be ensuring that the mining companies that interact with local communities have internal practices around human rights and have not committed human rights infractions in other communities around the globe. This can also be used to gain community acceptance.

Provide forums for peaceful protest for community members
These can include town community meetings with local, regional, and national representatives as well as community meetings with mining company representatives. Additionally, mining companies can designate a specific protest space, where people can gather to avoid blocking the road and creating conflict with security and local police forces.
Require a clear delineation between public and private police forces and military (there should not be military deployed for mine security)
If separated, the police can serve their purpose of protecting the people and mining security guards can be specifically trained for protecting the mines from the problems such as dealing with protests. This might reduce conflict as each body can remain more neutral and trained in ways that can best serve their constituents without a conflict of interest.
Require through contract or laws that mining companies have and use due diligence procedures
Through due diligence laws or requirements that follow the form of the UNGPs, France, or the EU's structure, Peru can place some of its burden of preventing human rights abuses in the extractive sector, on the corporations that are profiting off the exploitation.
Encourage mining operators to establish community ties even before the project is implemented
In terms of community engagement, MINEM can encourage prospective mining operators to establish ties with the local communities early and review the best practices from other Peruvian mining projects that have achieved general community acceptance.
Increase funding and training for local labor inspectors and create measures to ensure their safety when visiting mining projects
As of 2020, Peru had a reported 822 labor inspectors as compared with 807 from the previous year, but the US Department of Justice noted that pursuant to ILO's technical advice of having at least one inspector for every 15,000 workers in industrializing economies, Peru would need to employ an estimate of 1,135 inspectors.
Work with OECD and other organizations in crafting occupational health and safety regulations for uranium mining
Before proceeding with a full-on exploration of uranium, it will be necessary for Peru to first conduct studies on the amount of actual and potential uranium that will be handled by miners, then after these are identified, craft occupational health and safety regulations pursuant to international best practices as identified by international organizations such as the OECD and the World Nuclear Association.
Encourage mining operators to obtain third-party certifications
The attainment of such certifications allows mining stakeholders to be subjected to standards which are likely more stringent than those imposed under applicable laws, and consequently help promote a positive image of the entity in the investor community.
Craft occupational health and safety regulations in consultation with the OECD and other international organizations
As hard rock lithium mining has been done in other countries across the globe, there are likely best practices that have been tried and reported. International bodies like OECD are likely to have example regulations on occupational health and safety standards.
Increase funding and training for local labor inspectors and create measures to ensure their safety when visiting mining projects
The ability of labor inspectors to adequately ensure that no human rights violations are occurring is heavily dependent on financial and educational support from the government. Training programs can enhance the ability of inspectors to site labor violations, and enhanced funding will ensure inspectors have the resources and time to thoroughly inspect the mines.
Encourage operators to obtain third-party certifications

In other types of mining, mining operators get certifications from bodies that certify an operator's compliance with heightened standards relating to child labor, environment, and other concerns. These are standards that are above what local laws prescribe. The need for such certifications is heightened in lithium mining because of the potential safety risks of uranium.
Adopt suggestions from the US Department of State from their 2020 Trafficking in Persons Report: Peru
Specifically: 1) the government can require that lithium mining companies dedicate resources to planning law enforcement operations; 2) MINEM can ensure officials across sectors apply a definition of trafficking consistent with international standards; and 3) MINEM should enforce laws against crimes that facilitate trafficking, such as fraudulent job recruitment, illegal mining and logging, and counterfeit operations.
Adopt suggestions from The World Bank report: "Gender-Sensitive Approaches for the Extractive Industry in Peru: Improving the Impact of Women in Poverty and Their Families"
Specifically, MINEM should merge the efforts of the companies already practicing gender-equality enhancing strategies with government initiatives. Additionally, MINEM's lithium regulations can promote an enhanced reporting relationship between the companies and MINEM so that the government can assist in developing the training necessary to promote gender equality.
Regulations for new lithium mines should require that the mining companies conduct research according to the suggested methodology by Oxfam Australia report titled, "Women, Communities, and Mining: The Gender Impacts of Mining and the Role of the Gender Impacts Assessment."
Specifically, regulations should require that mining companies collect data of: 1) baseline poverty levels of local people based on race, ethnicity, gender, and socioeconomic status; 2) context of how the local communities might be affected by the mining project (e.g. gender roles in the family, industry, control of resources, etc.); 3) issues introduced by the mining project; 4) local women' needs. The mining company can then make recommendations and develop a gender strategy and regularly audit and review this strategy based on new data.
CDAs should include gender employment and training requirements
CDAs should guarantee gender employment requirements such as required percentages of female hires, training programs for women to do various technical jobs, and programs that support new mothers.

PART 3: LITHIUM AS AN ECONOMIC MULTIPLIER

Lithium should be an economic multiplier for Peru. This means that lithium mining, processing and development has the potential to significantly advance Peru's economic development, benefitting the country at large as well as historically marginalized and underserved people. This section of the report has been informed by research and interviews. It initially considers Bolivia's lithium development as a case study. It then evaluates Peru's foreign investment policy and revenue sharing framework. Finally, it investigates the potential for both upstream production (benefits coming from initial lithium mining) and downstream production (further lithium development and processing). In order for Peru's lithium development to be an economic multiplier, MINEM and the government of Peru should consider the following recommendations to ensure Peru will maximize its economic benefit from lithium exploitation.

RECOMMENDATIONS:
Continue the process for accession to the OECD

Membership in the OECD manifests a commitment to compliance with policies aimed at the economic and social well-being pursuant to international standards and will consequently boost investor confidence.
Limit the scope and duration of stabilization agreements with foreign investors
Poorly drafted stabilization agreements may lead a "chilling" effect on the ability of Peru to protect its own citizens and comply with international obligations. Significantly limiting and narrowing the scope and duration of these stabilization agreements is key.
Build institutional local government capacity
The capacity to administer and collect taxes can be built, but many sub-national governments lack the expertise and the resources to reach minimum standards of efficiency. Consequently, the national government must provide regional and local governments training and support in developing their tax administration and tax collection capacity and in formulating public benefit projects that utilize mining revenue transfers effectively, all in conjunction with the central government.
Expand local community capacity development especially on mining education
Technology and know-how from foreign established mining companies can only be useful for Peru if it has human and institutional capacities to absorb them. To foster self-sustaining local communities and build a competitive local workforce, the government can invest in local capacity building projects to educate and involve qualified locals in the mining process. A prime example that should be expanded and built on is the project between Montana Technology Universidad Nacional del Altiplano to advance mining education by producing future Peruvian mining engineers and experts.
Review the mining revenue generation and distribution formula
The OECD recommends increasing mining royalties and designing and implementing and integrated reform to subnational finances which includes increasing the proportion of investment funds such as mining royalties allocated to the regional level and reducing the proportion to municipalities and adopting a more equitable mechanism to disburse investment funds across regions.
Increase transparency in regional transfers and revenue allocation through the publication of disaggregated data on tax and royalty payments by companies to the Peruvian government
This is necessary to improve trust between subnational and national governments, align the expectations of local communities with the magnitude of revenues received at the local level, and increase accountability of subnational governments accountable. SUNAT publishes aggregate information on the payment of taxes and royalties for the entire sector in its periodical Nota Tributaria. However, these payments should be disaggregated by company, and preferably by project.
Establish a trust where revenues from the national government will be placed
The regional governments can preserve mining revenues it receives from the national government in the form of a trust that may only be withdrawn for pre-agreed sustainable development projects as part of a Sustainable Development Plan. This diversifies the economic production of the city and reduces corruption.
Federally regulate pricing of vital equipment and labor produced by local firms
The national government, through MINEM, can establish set prices (e.g. minimum wage, minimum pricing for industrial products and energy) for commonly contracted items procured by local firms. This will reduce the power differentials between foreign and local firms by minimizing undersells by the locals.
Create a legal framework to allow for "shared-use" access to mining-related infrastructure
Promoting and implementing these "shared-use" agreements will allow all stakeholders to benefit from mining infrastructure. Moreover, the government should encourage mining companies to consult with utility providers (water, power and telecommunications) to explore potential synergies with

mining–related infrastructure consistent with Mining Vision 2030's mandate that "the Project Company should not substitute the State for building, operating and maintaining infrastructure."
Enter into regional international agreements touching on the lithium value chain
Economic advisors suggest entering into regional international agreements that allow developing nations to work together in a global value chain to maximize their benefit from mineral extraction. For example, Peru, Chile, and Bolivia could work in coordination to leverage a shared-use agreement around roads, rails, and ports to facilitate the transportation of Bolivia's lithium to the coastal region for export.
Create policies to promote "consumption linkages" and "upstream linkages"
"Consumption linkages" arise when the accumulation of personal incomes derived from resource extraction leads to an increase in demand for products from other sectors in the local economy, while "upstream linkages" occur when the corporations transfer knowledge and technology to domestic suppliers. The Peruvian government and mining companies should jointly assess the local needs that will be met, create policies to reinforce buying local throughout the companies supply chain, to the best of their ability, and putting training programs in place to ensure that the capacity exists to support the company's needs. This can be done through coordination and split funding between the government and the operating company.
Develop a local content policy
A local content law/policy is one that requires firms to use domestically manufactured goods or domestically supplied services to operate in an economy. To ensure that mining companies comply with its local content commitments the government should set detailed and regular reporting requirements and define a clear process for approval. The local content policy should also recognize that the realization of upstream linkages anchored on these local content targets is a shared responsibility between the public and private sector. Thus, the government should identify what investments are necessary to complement, facilitate, and maximize the private sector's intervention. The local content policy should also be forward looking and consider the technological changes that the mining company is undergoing.
Support research projects with universities with the aim of specializing and improving the technology suited for the geology of Peru
Apart from potentially creating an environment that may lead to technological innovation, which in turn may reduce costs to mining companies, such projects have the potential to create knowledge spillovers and enhance the comparative advantage of the country.
Establish extraction and concentration processes prior to downstream processing
Peru should focus on the initial steps of successfully extracting lithium from the earth and concentrating lithium for further processing, before pursuing any additional step in the lithium supply chain. Since the extraction and concentration processes are complex and lucrative, downstream processing should not occur before two to five years of initial extraction and concentration.
Consider a regional downstream production agreement
Since Chile and Argentina already extract, concentrate and chemically process the lithium, Peru can sell its concentrated lithium to these countries through a trade agreement that would be mutually beneficial to these countries and assist with the economic development of the region. Please refer to *Appendix B* for a proposed regional agreement.

V. CONCLUSION

As a team, we have based our report on the principles of Mining Vision 2030, eight years of consultation with MINEM, and advice from global experts and researchers in the field. In this

report, we hope to elevate the economic potential hidden within Peru's lithium resources, as well as the environmental, social, and political risks that may arise in the process. This Columbia Capstone team believes in the global importance of lithium mining and hopes to see Peru as a leader in the sustainable transition toward renewable energy. However, the team recommends that Peru does this in a way that is environmentally, socially, and economically sound. We recommend that MINEM pause all current hard rock lithium mining exploration until the aforementioned recommendations are enacted.

INTRODUCTION

PERU is a robust source of various mineral reserves including silver, zinc, lead, tin, molybdenum, and gold. According to a US Geological Survey (USGS) report, Peru is currently 12th in the world with respect to lithium supply. However, Plateau Energy Metals Inc. has declared that the Falchani lithium project (located in Peru) is the sixth largest deposit of lithium in the world. This is an important development for the government of Peru, as lithium has become an increasingly sought-after mineral in the wake of the climate crisis due to its use in rechargeable batteries. The government of Peru has asked the Columbia Capstone team to craft a political and legal framework to ensure that the exploration and mining of lithium is both environmentally and socially sustainable. This Columbia Capstone team has crafted recommendations so that lithium may be an economic multiplier for the people of Peru.

The report examines three important considerations for mining lithium in Peru: 1) the environmental impact of hard rock lithium mining; 2) socio-political considerations of hard rock lithium mining; and 3) lithium as an economic multiplier. The team assessed current and global laws related to lithium mining, how they interact with Peru's current policy in Mining Vision 2030, and how Peru can cooperate with its regional neighbors, who are some of the most prominent lithium producers globally. The Columbia Capstone team interviewed experts in the fields of mining, geology, and legal frameworks for development. The team was fortunate enough to collaborate with many officials from Peru's government, including numerous officials from the Ministry of Energy and Mines (MINEM).

Based on extensive research, this Columbia Capstone team has concluded that enhanced research and development is paramount to ensuring the success of lithium mining in Peru. Environmental risks present themselves not only as a threat to the natural resources and beauty of Peru, but to the communities who live close to mining sites. The presence of uranium in the hard rock mining process is a health and safety threat that should be heavily researched before lithium mining continues. More specifically, this Columbia Capstone team believes that it would be in Peru's best interest to halt the Falchani project until specific and deep-dive research has been officially reported about: 1) how the company plans to protect the local environment from lithium and, even more importantly, uranium contamination and extensive water usage; 2) how the company and the government of Peru plan to work together to ensure community needs are being met; and 3) how the company can contribute to the economic growth of Peru. These findings can be expounded upon in forthcoming Columbia Capstone reports, if the government of Peru is interested in future collaboration.

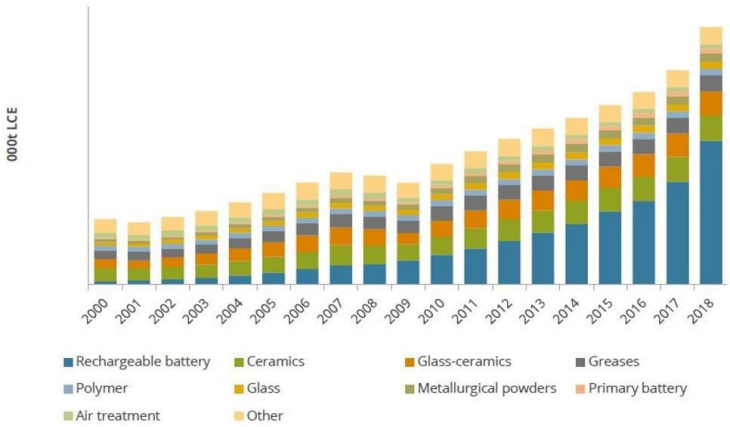
This Columbia Capstone team believes in the global importance of lithium mining and hopes to see Peru as a leader in the sustainable transition toward renewable energy. However, the team recommends that Peru does this in a way that is environmentally, socially, and economically sound.

BACKGROUND

I. INTRODUCTION TO LITHIUM

The United Nations (UN) Global Climate Action Agenda, the electric vehicle revolution, and the United States' Build Back Better Plan all depend on the extraction and refinement of lithium, a scarce resource nearly-exclusively found in alpine deserts in the Global South. Lithium, a name derived from the Greek word 'lithos' meaning "stone,"[1] is an alkali metal possessing a high specific heat property and high electrochemical potential.[2] As the 27th most abundant element on Earth,[3] lithium is the most electropositive metal, the lightest solid element, and the least dense solid element at room temperature.[4] Its physical, chemical, and electrochemical properties allow lithium and its compounds to have a vast assortment of applications, including in the production of energy storage units, ceramics, glasses, lubricants, purifiers, aircraft parts, and medicines for treating mania and bipolar depression.[5]

Lithium Use and Demand, 2000-2018



Source: Roskill estimates – World Consumption of Lithium by First Use, 2000-2018

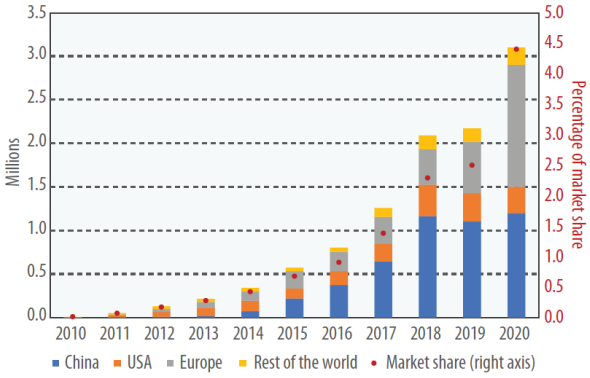
[1] Francisco L. Tabarés, Lithium: Technology, Performance and Safety (New York: Columbia University – Main 2013), 1.
[2] Ibid.
[3] Hal Aral, Angelica Vecchio-Sadus, "Toxicity of lithium to humans and the environment-A literature review," Ecotoxicology and Environmental Safety 70, Issue 3 (July 2008): 349, https://doi.org/10.1016/j.ecoenv.2008.02.026.
[4] Jean-Marie Tarascon, "Is lithium the new gold?," Nature Chemistry 2, 510 (2010), https://doi.org/10.1038/nchem.680.
[5] Tabarés, Lithium: Technology, Performance and Safety, 2-3.

Because of its high reactivity with air, nitrogen and water, lithium does not naturally exist in the form of pure metal,[6] and is found only in compounds[7] contained in brines or in hard rock form.[8] Although lithium has been discovered on all six inhabited continents, more than 75% of the known global lithium reserves are in Bolivia, Argentina, and Chile, which collectively are referred to as the "Lithium Triangle."[9] The lithium found in these countries is primarily extracted from continental brines found beneath salt flats. As of date, hard rock mining has not yet been implemented in South America.

II. Importance and Uses of Lithium

Lithium is the primary component of lithium ion (Li-ion) batteries, a type of rechargeable fuel cell that has been described as "the future of power."[10] The increase in demand for consumer electronics and electric-drive vehicles has been revolutionary, in part due to divestment from the fossil fuel market.[11] To respond to the greenhouse gases produced by fuel-powered vehicles, a total of 145 million electric-driven vehicles are expected to be produced by 2030, a massive jump from 10 million in 2020.[12] By the end of 2030, it is expected that global energy storage

Global new passenger electric car sales, by key markets, 2010–2020



Source: IEA (2021).

[6] Christian Juliem, Alain Mauger, Ashok Vijh, Karim Zaghib, Lithium Batteries – Science and Technology, Switzerland: Springer International Publishing Switzerland, 2016), 29.
[7] "En Argentina se habla de una "OPEP del litio" con Bolivia, Chile, y quizá Perú,", La República, Jan. 21, 2022, https://larepublica.pe/economia/2022/01/21/en-argentina-se-habla-de-una-opep-del-litio-con-bolivia-chile-y-quiza-peru/ "En Argentina se habla de una "OPEP del litio" con Bolivia, Chile, y quizá Perú,", La República, January 21, 2022, https://larepublica.pe/economia/2022/01/21/en-argentina-se-habla-de-una-opep-del-litio-con-bolivia-chile-y-quiza-peru/ "En Argentina se habla de una "OPEP del litio" con Bolivia, Chile, y quizá Perú,", La República, Jan. 21, 2022, https://larepublica.pe/economia/2022/01/21/en-argentina-se-habla-de-una-opep-del-litio-con-bolivia-chile-y-quiza-peru/
[8] Tarascon, "Is lithium the new gold?."
[9] Samar Ahmad, "The Lithium Triangle," Harvard International Review Vol. 41, No.1: 51, https://www.jstor.org/stable/10.2307/26917284.
[10] Gholam-Abbas Nazri, Gianfranco Pistoia, Lithium Batteries – Science and Technology (New York: Springer Science+Business Media, 2009).
[11] Nazri and Pistoia, Lithium Batteries – Science and Technology, 3.
[12] Daniel Ren, "Electric vehicle batteries: the Li-ion packs that power global marquees from Tesla to Volkswagen and BYD," South China Morning Post, published Oct. 31, 2021, https://www.scmp.com/business/companies/article/3154185/electric-vehicle-batteries-li-ion-packs-power-global-marquees.

installations will require a cumulative 358 gigawatts/1,028 gigawatt-hours, more than twenty times larger than the current capacity of such installations.[13]

Li-ion batteries can be a solution to this global problem. Li-ion batteries have a higher energy density than batteries made from lead acid, nickel-cadmium, and nickel-metal hydride,[14] and the highest charge-to-weight ratio of any battery.[15] This presents an opportunity for Li-ion battery manufacturers to take the lead in a market that would provide more than USD262 billion in investment during the decade, as well as an enormous advantage for countries with naturally occurring lithium reserves.[16]

Lithium can also be combined with other elements to produce alloys that have superior strength and lightweight properties, making it a useful material for ceramic and glass products.[17] Magnesium-lithium alloy can be used for armor plating, while aluminum-lithium alloys are used as material for aerospace[18] and aircraft parts, bicycle frames, and high-speed trains.[19] Lithium chloride solutions are used to dehumidify air for industrial drying and air conditioning systems.[20] Lithium stearate is a general-purpose lubricating grease with a high resistance to water and high melting point that is used as a stabilizer in the cosmetic and plastic industries.[21] Lithium carbonate is applied as medication to treat manic-depressive disorder, stabilizing mood and reducing extremes in behavior by restoring the balance of natural substances in the brain.[22] Lithium hydride is also used to store hydrogen and as a Li-on conductor.[23]

For a discussion on lithium extraction methods, please refer to *Appendix A*.

III. LITHIUM IN PERU

Peru is the second world producer of copper, silver, and zinc, third in lead, fourth in tin and molybdenum, and sixth in gold. While Peru has not yet mined lithium, according to a USGS report, Peru is currently twelfth in the world with respect to lithium supply, possessing an estimated 760,000 tonnes of the alkali metal.[24] In 2017, a significant discovery of an additional estimated four million tonnes of lithium carbonate equivalent (LCE) was found in the southern

[13] "Global Energy Storage Market Set to Hit One Terawatt-Hour by 2030," BloombergNEF, accessed Feb. 18, 2022, https://about.bnef.com/blog/global-energy-storage-market-set-to-hit-one-terawatt-hour-by-2030/.
[14] Ibid.
[15] Datu Buyung Agusdinata, Wenjuan Liu, Hallie Eakin, Hugo Romero, "Socio-environmental impacts of lithium mineral extraction: towards a research agenda," Environ. Res. Lett. 13, https://iopscience.iop.org/article/10.1088/1748-9326/aae9b1/pdf.
[16] Ibid.
[17] "Lithium," Royal Society of Chemistry, accessed Feb. 18, 2022, https://www.rsc.org/periodic-table/element/3/lithium.
[18] "Aluminum – Lithium Alloys," Total Materia, accessed Feb. 18, 2022, https://www.totalmateria.com/Article58.htm.
[19] Ibid.
[20] "Lithium chloride," Chemical Book, last accessed Feb. 18, 2022, https://www.chemicalbook.com/ChemicalProductProperty_EN_CB9854200.htm.
[21] "What Are the Uses for Lithium Stearate," Bisley International, published Feb. 17, 2021, https://bisleyinternational.com/what-are-the-uses-for-lithium-stearate/.
[22] "Lithium Carbonate – Uses, Side Effects, and More", WebMd, accessed May 9, 2022, https://www.webmd.com/drugs/2/drug-5887-42/lithium-carbonate-oral/lithium-oral/details.
[23] C. Vinod Chandran, P. Heitjans, "Solid-State NMR Studies of Lithium Ion Dynamics Across Materials Classes." Annual Reports on NMR Spectroscopy, Volume 89 (2016): 14, https://doi.org/10.1016/bs.arnmr.2016.03.001.
[24] "Lithium," United States Geological Survey, accessed Feb. 18, 2022, https://pubs.usgs.gov/periodicals/mcs2021/mcs2021-lithium.pdf.

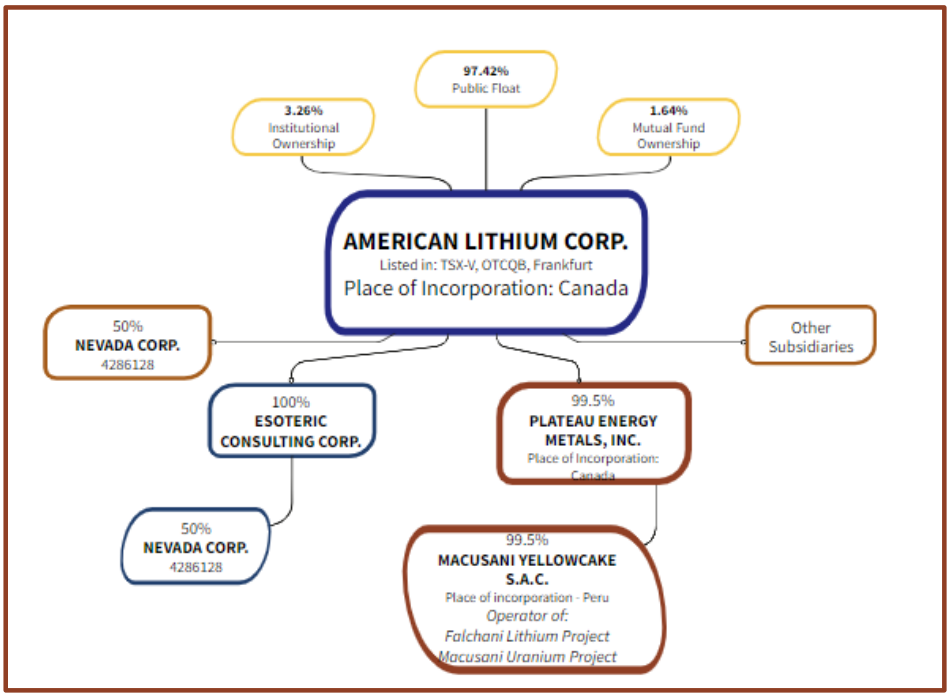
region of Peru, close to Lake Titicaca. If implemented, this would make Peru the sixth largest producer of Lithium globally.[25]

The Falchani Project is the only pending lithium development site in Peru. Located 650km east-southeast of Peru's capital city Lima, Macusani and Corani are the two nearest towns to the project site, located 25km and 14km respectively.[26] The site is accessible by roads from Interoceanica Highway from Juliaca.[27] The project includes an associated processing facility along with onsite and off-site infrastructure to support the operation with a mine life of 33 years.[28] The project is designed to achieve a peak milled tonnage of six million tonnes per annum (Mtpa) over three phases, with the first phase designed to produce 22,000Mtpa of battery grade lithium carbonate, and with subsequent phases increasing production by the addition of 22,000 tonnes per annum processing modules up to a peak of 89,000 tonnes per annum.[29] It is expected to produce a total of 2.1 million tonnes of lithium carbonate over the life of the project.[30] If these estimates are accurate, this would make the Falchani Project the sixth largest deposit of lithium in the world.[31]

IV. American Lithium Inc.

The only company currently involved in prospecting lithium in the Puno region is Plateau Energy Metals, Inc. Originally named Global Gold S.A.C., the subsidiary changed its name to Macusani Yellowcake in 2014,[32] Plateau Uranium in 2015[33] and then Plateau Energy Metals in 2018.[34] Plateau Energy Metals is 100% controlled and 99.5% owned by Canada-based American Lithium Corporation (formerly Plateau Energy Metals Inc.).[35] The figure below breaks down the complicated ownership structure of American Lithium Company.[36, 37, 38]

[25] "How Lithium findings in Peru are making it advantageous for India," Financial Express, accessed May 9, 2022, https://www.financialexpress.com/defence/how-lithium-findings-in-peru-are-making-it-advantageous-for-india/1690499/.
[26] Ibid.
[27] "Falchani Lithium Project, Puno," Mining Technology, accessed May 9, 2022, https://www.mining-technology.com/projects/falchani-lithium-project-puno/).
[28] Ibid.
[29] Ibid.
[30] Ibid.
[31] "En Argentina se habla de una "OPEP del litio" con Bolivia, Chile, y quizá Perú," La República, accessed May 9, 2022, https://larepublica.pe/economia/2022/01/21/en-argentina-se-habla-de-una-opep-del-litio-con-bolivia-chile-y-quiza-peru/.
[32] "GOLD GLOBAL MINING S.A.C." Dun & Bradstreet, accessed May 9, 2022, https://www.dnb.com/business-directory/company-profiles.gold_global_mining_sac.5ef687920e38d1bdf88b8e4cc87a8eb7.html.
[33] "Macusani Yellowcake Changes Name to Plateau Uranium and Announces Share Consolidation," GlobeNewsWire, accessed May 9, 2022, https://www.globenewswire.com/news-release/2015/04/30/1164571/0/en/Macusani-Yellowcake-Changes-Name-to-Plateau-Uranium-and-Announces-Share-Consolidation.html.
[34] "Plateau Uranium Announces Name Change," GlobeNewsWire, accessed May 9, 2022, https://www.globenewswire.com/news-release/2018/03/15/1437992/0/en/Plateau-Uranium-Announces-Name-Change.html.
[35] "Management & Advisors," American Lithium, accessed May 9, 2022, https://americanlithiumcorp.com/management/.
[36] "Financial Reports," American Lithium, accessed May 9, 2022, https://americanlithiumcorp.com/financial-reports/-.
[37] "American Lithium Corp.," MSN, accessed May 9, 2022, https://www.msn.com/en-us/money/stockdetails/ownership/fi-ab4dqh?ownershipType=institutional.
[38] "Macusani Project," Mining Data Online, accessed May 9, 2022, https://miningdataonline.com/property/4541/Macusani-Project.aspx.



The company began prospecting for Uranium in the Macusani Plateau in 2007. They uncovered a number of mineralized zones with high-grade uranium around the region, reporting 24,000 hectares as of 2010.[39] In March 2020, Macusani Yellowcake submitted the preliminary economic assessment (PEA) of the Falchani Lithium Project, the first lithium discovery made at the site. The PEA, prepared in accordance with National Instrument 43-101 by DRA Global, proposes the Falchani Project's feasibility and its ability to become a viable producer of lithium carbonate. It states that the Falchani Project can be a scalable, long mine life project with the potential to produce high quality and low impurity battery-grade lithium chemical product.[40] Based on the PEA, the Falchani project contains 60.92Mt of indicated mineral resources with contained LCE of 0.96 metric tonnes (Mt) and 260.07Mt of inferred resources with 3.75Mt of LCE.[41] From these mineral resources, the Falchani Project is estimated to produce approximately 63,000 tonnes per annum of lithium concentrate (Li2CO3) over a mine life of 33 years. The base case capital cost is expected to be USD1.97 billion over the life of the mine inclusive of mine rehabilitation and closure costs, with an initial capital expenditure of USD587 million allocated for Phase I.[42] Despite these public disclosures, a government source reported that no quality or

[39] "Macusani Yellowcake discovers new, deeper highgrade zone at Kihitian uranium project in Peru," Proactive Group Holdings Inc. (Proactive Investors: 26 Nov 2010).
[40] Ibid..
[41] "Falchani Lithium Project, Puno" Mining Technology, accessed May 9, 2022, https://www.mining-technology.com/projects/falchani-lithium-project-puno/.
[42] Ibid.

quantity assessment of the presence of metallic or nonmetallic material has been submitted to the Peruvian government. American Lithium has pledged to incorporate environmentally responsible initiatives such as the use of filtered tailing to recycle up to 90% of process water, the use of environmentally responsible dry stackings tailings technology, and establishment of sulfuric acid plant on site to produce sufficient clean energy power.[43]

At present, American Lithium's Falchani Project is not yet operational. After a number of acquisitions and mergers, it is difficult to determine an individual or individuals who may be held responsible for its legal and corporate actions. The company will need to submit environmental and social protection plans for government review if it wishes to continue with extracting or initiating mining operations. Nonetheless, the government of Peru appears supportive of the company mining in this region once official reports have been filed with MINEM. In a statement after a meeting with American Lithium Corporation, President Pedro Castillo commented:

> [W]e remain committed to the economy of Peru in general and, in particular, the mining sector with no plans for nationalization or expropriation. We are highly supportive of the work that American Lithium is doing and believe that Peru is very well positioned to become a global leader in the supply of metals for the new energy paradigm. We also welcome foreign investment into Peru with clear rules that protect the people, and the environment and which promotes the economic development of the region and the country.[44]

The current project falls under the Falchani and Ocacasa concessions held by Plateau Energy Metals.[45] The current mining concession gives Plateau Energy Metals the right to explore but not exploit or develop mineral substances, including lithium.[46] Plateau Energy Metals has six other concessions on the Macusani Plateau for uranium exploration.[47] The exploration concessions cover a total area of 93,000 hectares.[48]

For a discussion on Macusani town and district and their involvement in mining, please refer to *Appendix D*. For a discussion on global lithium protests, see *Appendix E*. For an examination of lithium development in Bolivia, Argentina, and Chile, collectively known as the "Lithium Triangle," please see *Appendix F*.

V. Current Regulations on Lithium in Peru

The regulatory structure of mining in Peru, which will govern the extraction of lithium, is informed by international treaties, national revenue and corporate laws, environmental laws, transparency and governance laws, social laws, and foreign direct investment laws. In addition to the national legislation governing, the decentralized system of government established by the

[43] Ibid.
[44] "American Lithium CEO Meets In Person With the President of Peru, Global NewsWire, accessed May 9, 2022, https://americanlithiumcorp.com/2021/09/22/american-lithium-ceo-meets-in-person-with-the-president-of-peru/.
[45] Falchani Mining Concession conferred on 13/10/2005 and Ocacasa 4 Mining Concession conferred on 11/07/2005; Falchani Lithium Project Ni 43-101 Technical Report -Preliminary Economic Assessment, p. 44.
[46] Falchani Lithium Project Ni 43-101 Technical Report -Preliminary Economic Assessment, p. 44.
[47] Ibid. at 42.
[48] Ibid.

Peruvian Constitution will afford the Puno region with significant autonomy on lithium regulations as regional governments have "political, economic, and administrative autonomy on pertinent matters within their jurisdiction."[49]

As the sovereign owner of all minerals found within Peru, the central government is "entitled to grant rights in favor of national and foreign individuals or companies in accordance with the regulations applicable to each sector."[50] It does so principally through the National Mining Law, which requires permitting for mining activities that go beyond reconnaissance and prospecting.[51] Permits of mining operations that are deemed to be on a "large" or "medium" scale are supervised by the central government, while regional governments are responsible for those that are grouped into "small" or "artisanal" scale operations. At the national level the process of supervising mining and enforcing regulation is delegated to agencies: the Mining and Metallurgical Geological Institute (INGEMMET) is responsible for granting titles, fees, and penalties for mining activities; MINEM regulates the mining activities and public policy, this includes granting the permits to allow companies to begin and continue the extractive processes; the Organization of Supervision and Environmental Assessment (OEFA) enforces environmental regulations concerning mining activities; and National Superintendence of Labor Inspection (SUNAFIL) enforces health and safety regulations, including employee protections, that concern mining activities.

Key environmental regulations that govern mining at the national level include regulations for the Protection of the Environment applicable to the development of Mining Exploration Activities and the Environmental Regulations for Mining and Metallurgic Activities.[52] These regulations, in conjunction with the General Environment Law, set forth the cost internalization principle, which requires that extractive companies remedy any environmental harm they create through prevention and mitigation measures, as well as ban mining from certain protected areas in Peru. In addition to these regulations, Law 28090 requires companies to submit a Mine Closure Plan before permits can be authorized, allowing for the protection of the environment in the event mining activities are abandoned.

Although the described regulatory structure above will also apply to lithium, its relative importance has created calls for the central government to take steps to create laws and regulations specifically for the development of lithium. The Peruvian congress referred to lithium as "a strategic resource and their exploration and production of national interest," in a bill requiring the executive branch to enact a law supporting its development.[53]

Regional trade agreements, international environmental law, and human rights law have an important role in placing global limits to extractive industries. According to Chapter II, Article 55 and 56 of the Peruvian Constitution, international regulations and treaties take precedence

[49] Peru Constitution 1993 (rev. 2009).
[50] Ibid., Peru Const.
[51] Palomino, Daniel, "The Mining Law Review: Peru" in Law Review (Law Business Research: 1 November 2021).
[52] "Peru: Global Mining Guide." Baker Mackenzie: 2022, https://resourcehub.bakermckenzie.com/en/resources/global-mining-guide/latin-america/peru/topics/global-mining-guide.
[53] "Declaran de interés nacional exploración y explotación del litio y derivados," Centro de Noticias del Congreso (Congreso De La Republica, 14 May 2021).

over local or regional law.[54] Although no international agreements on lithium have been ratified within South America, there is an abundance of applicable treaties, human rights agreements, and environmental agreements that can guide regulations for new lithium developments within the countries of the Lithium Triangle and Peru. Peru is a state party to many applicable human rights treaties such as the International Convenant on Civil and Political Rights (ICCPR) and International Covenant on Economic, Social and Cultural Rights (ICESCR).[55] More information on international treaties Peru is subject to are outlined in Parts I and II.

VI. ROYALTIES

International mining companies pay royalties to the state for the minerals they extract. Different royalty structures in neighboring countries can affect the amount of mining sector foreign investment a country receives, and therefore the impact that a given investment will have on the growth and prosperity of a country.[56] The countries in the so-called "Lithium Triangle" have varying royalties on lithium, affecting how "investor friendly" they are.[57] As of 2014, Argentina had a 3% royalty on lithium, while Bolivia had a 12.5% royalty, and Chile 6.8%.[58] Below is a chart of comparative mining royalty rates collected in 2013 by the United Nations Economic Commission for Latin America and the Caribbean (ECLAC).[59] For more information about the Lithium Triangle, please see *Appendix F*.

[54] Peruvian Constitution, chap. II, art. 55, 56 § 1-4.
[55] "UN Ratification Status For Peru." UN Treaty Body Database, accessed May 9, 2022, https://tbinternet.ohchr.org/_layouts/15/TreatyBodyExternal/Treaty.aspx?CountryID=136&Lang=EN.
[56] Heidrich, Pablo, "Tax Regimes on Mining in Latin America," (The North-South Institute: September 2013).
[57] Remco Perotti & Manlio F. Coviello, "Governance of Strategic Minerals in Latin America: The Case of Lithium" UN ECLAC, (Sept. 2015), https://www.cepal.org/sites/default/files/publication/files/38961/S1500861_en.pdf.
[58] Ibid.
[59] "Economic Survey of Latin America and the Caribbean 2014: Challenges to Sustainable Growth in a New External Context," ECLAC, (Santiago: United Nations Publications, 2014).

PART 1: ENVIRONMENTAL IMPACTS OF LITHIUM MINING

CASE STUDY:

AUSTRALIA: THE WORLD'S LARGEST LITHIUM PRODUCER

Australia is a country leading the development of hard rock lithium mining, allowing it to serve as a relevant case-study for Peru.

In 2020, Australia was the world's largest lithium producer, producing an estimated 40,000 tonnes of lithium, or 46.3% of the global total supply from hard-rock lithium mining.[60] Australia has the second-largest share of lithium reserves, the majority of which are found in hard rock mineral deposits. Located in Northwestern Australia, open-pit lithium mines such as the Pilgangoora and Wodgina mines are leading examples of "mature" operating lithium mines.[61] Like Peru, Australia's hard-rock lithium deposits are mixed with uranium deposits, making Australia serve as a relevant case study when investigating potential environmental regulations.

Uranium is particularly dangerous when waste treatment sites or tailings dams fail, releasing radioactive materials into surrounding groundwater. As the 2021 Columbia Capstone Project reports, "Tailings dams are wastewater retention ponds associated with mining activities. Hundreds of thousands of these long-term storage facilities exist worldwide, many without proper management and monitoring plans." Tailings dams' failures are cited as one of the most potentially environmentally devastating impacts of hard-rock lithium mining.[62] This is of particular concern when considering the health impacts that uranium exposure can have on surrounding communities. Australia uses an off-site lithium tailings facility to manage this waste, which may be a better solution to local stakeholders.

Furthermore, Australia has created buffer zones around lithium mines to protect vulnerable ecosystems from disruptions caused by mining activities. The Yale Center for Environmental Law and Policy recommends creating buffer zones around critical habitats of 10 km. Such activity may include noise pollution, transportation of mining infrastructure, and the actual mining activities themselves.

The local communities near these mines may experience many of these negative impacts of lithium mining without finding the benefits of lithium battery usage.

[60] "Chartered: Lithium Production by Country (1995-2020)," Govind Bhutada, Visual Capitalist. February 9, 2022, https://www.visualcapitalist.com/charted-lithium-production-by-country-1995-2020/.
[61] Dolega, Peter & Buchert, Matthias & Betz, Johannes. (2020). Environmental and socio-economic challenges in battery supply chains: graphite and lithium. Fab4Lib, Institute for Applied Ecology. https://www.researchgate.net/publication/354253801_Environmental_and_socio-economic_challenges_in_battery_supply_chains_graphite_and_lithium.
[62] Ibid.

According to S&P Global, lithium demand is forecasted to hit an estimated two million tonnes by 2030. This level of demand would require production to increase by over 2,200% from 2020 levels. Australia has thus far met this need but Peru has the opportunity to join the race to meet the world's projected lithium battery demand.

I. Covering the Basics: Health and Pollution Concerns

Mining and ore processing adversely pollutes air, soil, and water. Lithium hard rock mining is a large-scale industrial activity and may disturb large swaths of natural habitats. Mining waste is another environmental concern, due to lithium's high waste-to-product ratio.[63] Hard rock mining extracts rock below ground level. When rock is crushed, it exposes radioactive elements, asbestos-like minerals, and metallic dust.[64] Residual rock slurries, which are mixtures of pulverized rock and liquid, are produced as tailings during separation, and toxic and radioactive elements from these liquids can leak into bedrock if not properly contained.[65] Hard rock mining may also give rise to acid mine drainage, erosion and sedimentation, toxic spills, large quantities of wastewater, and drainage of other materials generated by mining.[66] Because of lithium mining's water intensity, water scarcity and pollution may have severe and far-reaching consequences for human health and native biodiversity.[67]

As the demand for lithium around the world increases, so do concerns about the potential environmental impacts of lithium mining and processing. As the first location where hard rock lithium was found in Peru, the Puno region and Macusani district is a vital testing ground of environmental policies specifically targeting lithium. Edmundo Caceres, the community leader of Corani in Macusani, is worried that the proper environmental certifications were not obtained by Macusani Yellowcake when it discovered lithium.[68] The lack of proper environmental assessment and government authorization means that the Falchani Project may have failed to identify and report on environmental risk, solutions, and interventions and achieve community participation at the time of discovery of lithium. At present, an environmental impact assessment is ongoing for the Falchani Project.[69] This assessment will include community relations and impacts of future development, as well as flora, fauna, water, air and noise sampling and comprehensive archaeological studies. Strict compliance with required environmental laws and regulations is vital to avoid environmental degradation and significant social opposition.

[63] Daniel Palomino and Tony Bustamante, "The Mining Law Review," The Law Reviews, November 1, 2021, https://thelawreviews.co.uk/title/the-mining-law-review/peru-mining-law.
[64] "Environmental Risks of Mining," Massachusetts Institute of Technology, accessed Feb. 16, 2022, https://web.mit.edu/12.000/www/m2016/finalwebsite/problems/mining.html.
[65] "Environmental Risks of Mining," Massachusetts Institute of Technology, accessed Feb. 16, 2022, https://web.mit.edu/12.000/www/m2016/finalwebsite/problems/mining.html.
[66] "Office of Wastewater Management - Hardrock Mining: Environmental Impacts," U.S. Environmental Protection Agency, accessed Feb. 16, 2022, https://www3.epa.gov/npdes/pubs/env.htm.
[67] Thomas Wagner, "The Lithium Future – Resources, Recycling, and the Environment." Conservation Letter (March 2011): 202–206, https://conbio.onlinelibrary.wiley.com/doi/10.1111/j.1755-263X.2011.00166.x.
[68] Marilu Nunez Palomino, "Lithium Mining in Peru," Panoramas, Jan. 1, 2020. https://www.panoramas.pitt.edu/economy-and-development/lithium-peru.
[69] Plateau Energy Metals, "Plateau Energy Metals Announces Positive Preliminary Economic Assessment for Falchani Lithium Project,", Global News Wire, Feb. 4, 2020, https://www.globenewswire.com/news-release/2020/02/04/1979228/0/en/Plateau-Energy-Metals-Announces-Positive-Preliminary-Economic-Assessment-for-Falchani-Lithium-Project.html.

A. Health Impacts of Lithium Mining

There is no safe exposure limit for lithium carbonate. Skin contact exposure requires immediate washing, and inhalation or oral exposure requires medical attention.[70] These impacts range from impaired thyroid and kidney function to cognitive impairment to potential reproductive risks. Because lithium is highly soluble, it is crucial that groundwater exposure is minimized when mining. There is no known threshold for lithium exposure where, below this point, one would be considered "safe" from health consequences of lithium, and above which one is at risk.

RECOMMENDATIONS:
Establish consistent norma tecnicas
When writing and establishing policies, specific and practical guidance must be initiated to take special care for radioactive materials extracted alongside lithium, particularly uranium. The government should implement safe mining regulations in keeping with Mining Vision 2030 priority #2: improved practices in water resource management. Particularly, MINEM should consult with domestic and international experts in the field, not just from an environmental perspective, but also from an economic and sociopolitical perspective, to see the feasibility and effectiveness of imposing this requirement.
Advanced planning across national administration authorities
The importance of this discovery and its impact on the environmental, social, and economic landscape of Peru necessitates high attention and advanced planning to maximize benefits and avoid the serious environmental concerns of Peru's neighbors. MINEM should work with the CEPLAN to develop an institutional plan for the execution of these strategies.

B. Health Risks Posed by Uranium

American Lithium Corp's Macusani Yellowcake project initially cited exploration looking for uranium deposits in the Puno Region of Peru. It is common for uranium, mercury, and arsenic to be found in the same mines as hard-rock lithium deposits due to the nature of tuffaceaus rock.[71] There are two types of hazards to uranium exposure: internal exposure (ingestion, inhalation, or via a cut in the skin) and external exposure (beta, gamma, and alpha radiation).[72] Internal exposure will generally pose a threat to miners working near uranium. Internal exposure to uranium has strong links to lung cancer, creating occupational health hazards for miners, who may regularly inhale dusty air with trace amounts of this substance, and pose a serious health threat over time. External exposure may impact a larger general population. External exposure may occur when uranium seeps into water sources. This may occur when extreme weather

[70] New Jersey Department of Health, "Hazardous Substance Fact Sheet: Lithium Carbonate," nj.gov, accessed May 8, 2022, https://nj.gov/health/eoh/rtkweb/documents/fs/1124.pdf.
[71] James J. Rytuba and Richard K. Glanzman, "Relation of Mercury, Uranium, and Lithium Deposits to the McDermitt Caldera Complex, Nevada-Oregon," USGS Numbered Series, Relation of Mercury, Uranium, and Lithium Deposits to the McDermitt Caldera Complex, Nevada-Oregon, vol. 78–926, Open-File Report (U.S. Geological Survey, 1978), https://doi.org/10.3133/ofr78926.
[72] Committee on Uranium Mining in Virginia, Committee on Earth Resources, and National Research Council, Potential Human Health Effects of Uranium Mining, Processing, and Reclamation, Uranium Mining in Virginia: Scientific, Technical, Environmental, Human Health and Safety, and Regulatory Aspects of Uranium Mining and Processing in Virginia (National Academies Press (US), 2011), https://www.ncbi.nlm.nih.gov/books/NBK201047/.

events, such as flooding, fires, or earthquakes cause tailings dams and waste storage facilities to fail. Once groundwater is contaminated, it may cause serious renal damage to anyone who drinks it.[73] However, it should be noted that the long-term health consequences of low-level exposure to uranium in drinking water have not been conclusively studied.

Understanding that there are serious health consequences for both miners and surrounding populations as a result of exposure to uranium, it is of particular concern that two prior mining proposals from Macusani Yellowcake S.A.C. have been denied by MINEM. These two projects, Chaconiza (2018) and Quelcaya (2022), were given unfavorable results by MINEM in Macusani Yellowcake's request to begin exploration. [74] [75] In reference to the Chacoconiza project, MINEM determined that the proposed project did not meet the environmental standards and modifications required by the ministry to proceed with exploration. In reference to the Quelcaya project, the Instituto Peruano de Energia Nuclear (IPEN), or the agency responsible for regulating radioactive material determined that the Quelcaya project did not meet the safety standards required to begin exploration. This decision was further supported by the Autoridad Nacional del Agua (ANA), the water authority of Peru, because the proposal violated the Water Resource Law of Peru (Ley N° 29338). [76] These two previous rulings demonstrate that MINEM cares deeply about the safety of mines and how they will impact surrounding communities and vulnerable populations.

Although uranium has been mined in many locations previously, the most comprehensive set of rules and regulations exist in Australia, which employs over 1200 workers in uranium-related mining jobs.[77] Australia uses the Code of Practice and Safety Guide: Radiation Protection and Radioactive Waste Management in Mining and Mineral Processing, which was updated in 1995, 2005, and 2015.[78] This code sets standards for exposure to radon gas, a concern when working in uranium mines, for both employees and the public. Furthermore, it attempts to reduce radiation doses for employees and the public. Its standards exceed that of international agencies' recommendations, like The International Commission on Radiological Protection and the International Atomic Energy Agency. It consists of both a code of practice, which sets regulations for mining companies, and a safety guide that provides information in the development of a radioactive waste management plan.

RECOMMENDATIONS:
Establish a code of practice for radioactive waste
Create an internationally accepted code of practice for radioactive waste management in Peru. Do not approve Macusani Yellowcake's Macusani Project or Falchani Project until concrete internationally accepted standards for safely disposing of radioactive material is

[73] Anthony Staines et al., "URANIUM IN DRINKING WATER - HUMAN HEALTH EFFECTS," Epidemiology 15, no. 4 (July 2004): S110.
[74] Dirección de Gestión Ambiental de Minería to Ing. Teresa Ysabel Macayo Marin, Dec. 13, 2018, Chacaconiza, Ministerio de Energía y Minas, Informe No 183-2018-MEM-DGAAM-DEAM-DGAM, Referencia Escrito No. 2857077, Escrito No. 2881300
[75] Dirección de Gestión Ambiental de Minería to Ing. Venancio Santiago Navarro Rodriguez, May 15, 2022, Quelcaya, Ministerio de Energía y Minas, Informe No 115-2022/MINEM-DGAAM-DEAM-DGAM, Referencia Escrito No. 3167391
[76] "Ley de Recursos Hidricos," Text, SINIA | Sistema Nacional de Información Ambiental, accessed May 8, 2022, https://sinia.minam.gob.pe/normas/ley-recursos-hidricos-0.
[77] Mining People International, "How Safe Is It to Work in a Uranium Mine?," MPi > Contract and Permanent mining jobs for the resource industry, accessed May 8, 2022, https://www.miningpeople.com.au/news/how-safe-is-it-to-work-in-a-uranium-mine.
[78] John Loy, "Radiation Protection and Radioactive Waste Management in Mining and Mineral Processing," n.d., 63.

established and has been approved by recognized international experts and authorities on uranium mining safeguards and radioactive waste management.
Consult outside experts to form regulations on uranium
This is the first time MINEM has worked on a project involving radioactive waste. MINEM should consult outside experts with experience working on these sensitive materials to establish their regulations. At a minimum, a radiation management plan and a radioactive material waste management plan should be established to ensure mining projects meet internationally accepted radioactive material standards. Look to Australia's Code of Practice for Reference. This will further allow for international standards around uranium mining to be established.

C. Recycling Lithium

While 95% of a lithium-ion battery is recyclable at the end of its lifetime, consumers recycle only 2% of lithium batteries produced. When lithium is thrown away, the metal leaks from landfills into the water and the environment, polluting waterways and the soil. If not monitored, this toxic pollutant could have serious health consequences. Most lithium produced in the Lithium Triangle is exported, making this a global health concern, rather than a local concern. While exportation would not directly impact Peruvian health, responsible transportation, disposal and recycling policies are key to encourage sustainable growth of lithium dependence.

RECOMMENDATIONS:
Determine how much lithium is in Peru
MINEM should work with CEPLAN and SINANPE in developing a MRE system; adopt MRE best practices from international institutions such as the USGS and align Peruvian data with data from these institutions. The government may take samples to establish thorough knowledge of any uranium deposits in the mine.

CASE STUDY:

THE NORDIC TREATY: A SUCCESSFUL MULTILATERAL, REGIONAL ENVIRONMENTAL TREATY.

The Nordic Treaty is an example of a successful multilateral, regional environmental treaty. We investigate potential applications for the lithium-rich countries of Latin America.

The Nordic Environmental Protection Convention and Protocol (NEPC) is a regional treaty between the Northern European countries of Denmark, Norway, Finland and Sweden to prevent transboundary environmental issues. Enacted in 1976, this agreement recognizes the need to prevent such transnational problems associated with such the "tragedy of the commons," or similarly a "race to the

bottom." To prevent pollution of common waterways, encourage stringent environmental regulations without disincentivizing industrialization, improve air quality, and preserve migratory species, regional agreements such as this work on the basis of reciprocity: encouraging good behavior for the fear of facing negative externalities of other nations if the agreement is broken. Such agreements have generated striking success, as will be discussed below in the context of the NEPC, and have the potential to be a determining factor in the possibility of sustainable development of lithium in Peru.

The NEPC deals primarily with transboundary pollution, particularly that of shared waterways. It creates a regulatory regime in which any member harmed by environmental destruction can sue in any of the contracting states for a judgment on the basis of nuisance[79], institutes supervisory bodies to monitor environmental activities in the contracting states, establishes a permitting regime for activities that have transboundary environmental effects, and allows for the creation of a neutral adjudicatory body. These structures are organized into a three-pillar system that consists of: 1) a pillar of non-discrimination; 2) the principle of equal rights of access; and 3) the principle of information obligation.[80] Although Peru is already party to several regional agreements concerning the environment such as the Amazon Cooperation Treaty, the Lectia Pact, the Pacific Alliance, and the Lima Declaration on Illegal Animal Trade, none of these treaties address environmental problems with mining.

RECOMMENDATIONS:
Draft a regional environmental treaty:
Latin American nations that are developing lithium should start discussions for a lithium mining environmental protection treaty to prevent capitalization of foreign investments on business-friendly but environmentally hostile lithium regulatory schemes. The components of the treaty are further expounded on in *Appendix B*.

II. CONCERNS ON WATER AND IMPORTANT CONSIDERATIONS INVOLVING TAILINGS DAMS

As pointed out in the 2015 Columbia Capstone, Peru faces water issues associated with mining in terms of water scarcity and water contamination.[81] Land and water pollution caused by hard rock mining, specifically toxic spills and acid mine drainage, can cause adverse effects to wildlife.[82]

[79] Nuisance is a legal doctrine that allows for injunctive relief or damages when one's use of property affects the property rights of others. In the case of Lithium, when a mining operation creates air or water pollution affecting the local communities.
[80] "The 1974 Nordic Environmental Protection Convention," Nordics.info, accessed May 9, 2022, https://nordics.info/show/artikel/the-1974-nordic-environmental-protection-convention.
[81] See 2015 Columbia Capstone, p. 144.
[82] "Hardrock Mining," National Wildlife Federation, accessed February 16, 2022, https://www.nwf.org/Our-Work/Waters/Hardrock-Mining#:~:text=The%20mines%20that%20produce%20our,pollution%20from%20hard%20rock%20mines.

Water is a human right. "[o]ver one third of human rights allegations (35%) recorded in South America relate to environmental impacts" and out of those impacts, 42% are related to water rights, 34% are related to water pollution, and 27% are related to water access.[83] As mentioned previously, mining in Peru has thus far been limited to hard rock extraction, and while less water intensive than lithium brine extraction it is still critical to consider the impacts of water pollution on lithium mining in Peru as lithium dependence and discovery increases.

A. Lithium: A Water-Intensive Extractive Industry

Lithium is most commonly mined using a brine method, as discussed previously, which has been estimated to use 500,000 gallons of water per ton of mined lithium. This enormous water demand is due in part to the evaporative nature of harvesting lithium from brine. Up to 95% of extracted brine water is lost to evaporation and not recovered or regenerated. This places an intense strain on water-scarce regions near the Lithium Triangle. In Chile's Salar de Atacama, lithium mining activity consumes 65% of the region's water supply. Just over the Peruvian border, the Puno region has an average rainfall of a mere 28.8 inches per year. High water dependence is compounded by the environmental impact of brine evaporative technology, which negatively impacts surrounding ecosystems and may permanently alter local biomes.

Lithium mined from hard rock, like that found in Peru, does not place the same intensity on water usage. However, researchers in Nevada found adverse health impacts on fish 150 miles downstream from a lithium processing plant. Heavy metal and metalloid (HMM) contamination has been investigated at hard rock lithium mining sites in the western Sichuan Province of China. Researchers discovered high levels of lead, zinc, and manganese, as well as increased pH levels and reduced dissolved oxygen in surrounding surface water, all of which can have damaging ecological consequences. Because the technology for hard rock lithium exploration and mining is relatively new, researchers have not yet quantified the extent to which these pollutants are a result of hard rock lithium mining. The Puno region of Peru has many livelihood farmers, and it is imperative that the health impacts are fully understood before mining development proceeds. This lack of data is a serious concern when assessing the environmental impacts of lithium mining.

According to DRA Pacific's "Falchani Lithium Project, NI 43-101 Technical Report – Preliminary Economic Assessment", raw water supply is still a necessary requirement for the Falchani Project's lithium production.[84] The raw water, which is sourced from local river courses and wells and stored in a Raw Water Tank close to the plant, is used in the hard rock mining process for water leaching, hot-water washes, and cold-water rinses.[85] In total, the process is expected to require 1.38m^{3}/t of feed to the plant.[86] While 2016 engineering consultants estimate that there are sufficient water resources in the area, "[t]he availability of water has not been assessed during the [Preliminary Economic Assessment] and it is recommended that the availability of suitable water be quantified in later stages of the Project's development."

[83] Business and Human Rights Resource Centre, "2021_TMT_South_America.Pdf," media.business-humanrights.org, March 2021, https://media.business-humanrights.org/media/documents/2021_TMT_South_America.pdf.
[84] John Joseph Riordan et al., "Falchani Lithium Project Ni 43-101 Technical Report - Preliminary Economic Assesment" (DRA Pacific for - Plateau Energy Metals Inc., March 19, 2020), https://minedocs.com/20/Falchani_PEA_03192020.pdf.
[85] Ibid.
[86] Ibid.

While the Falchani Project has not responded to comments on their Preliminary Economic Assessment, the company attempts to alleviate these concerns through "Green Initiatives" posted on their website. These initiatives include achieving water efficiency through the use of filtered tailings (enabling recycling of up to 90% of process water), which will be discussed in detail below, and future development work to evaluate opportunities such as "rainwater run off storage and additional water recycling."[87] Additionally, Falchani Project's baseline study has "…recently progressed into an EIA that includes community relations and impacts of future development, as well as flora, fauna, water, air and noise sampling and comprehensive archeological studies."[88] However, community advocacy may also intensify with increased water competition. In Argentina, Guayatayoc communities dependent on groundwater released a statement called Kachi Yupi (Salt Footprints) to bring attention to the local community needs[89] and in Chile, "the Atacama People's Council has set up monitoring stations in a lagoon on its salt flat in order to monitor changing water levels."[90]

According to the Business and Human Rights Resource Center, one-third of all water-related environmental human rights allegations in South America "indicate a lack of adequate environmental legislation, with allegations recorded either under inadequate environmental impact assessments or environmental safety standards."[91] This is especially problematic in Peru, because Article 7-A of the Constitution states that "[t]he State recognizes the right of everyone to have progressive and universal access to drinking water. The State guarantees this right by prioritizing human consumption over other uses. The State promotes the sustainable management of water, which is recognized as an essential natural resource and as such, constitutes a public good and a patrimony of the Nation. Its domain is inalienable and imprescriptible." Currently, the discharge of effluents into bodies of water is regulated through the General Environmental Law (GEL) and the National Water Authority (ANA).[92] If a company breaks the law, or does not adhere to the permit granted to them by the ANA, they are subject to fines, remedial costs, or loss of licensure.[93] According to the Peru Investment Fund, "[i]n recent years, Peru has enacted a new regime of environmental laws, which establishes the main environmental guidelines and principles applicable in Peru. Pursuant to these laws, MINEM and the Environmental Ministry have issued regulations mandating environmental standards for the mining industry and reviews and approves environmental studies for mining operations. These laws and related regulations significantly increased the level of environmental regulation previously in effect in Peru and established a number of environmental management standards as well as guidelines with respect to particulate emissions in air, water quality, exploration,

[87] Ibid.
[88] Ted O'Connor, "Management Discussion and Analysis" (Plateau Energy Metals Inc., March 31, 2018), https://plateauenergymetals.com/wp-content/uploads/2019/04/2018-03-31_PLU_MD_A.pdf.
[89] Juan Jose Relmucao, "Lithium Mining in Argentina Threatens Local Communities," NACLA, January 18, 2021, https://nacla.org/lithium-mining-argentina-threatens-local-communities.
[90] Ahmad, Samar. "The Lithium Triangle: Where Chile Argentina and Bolivia Meet" Harvard International Review 41, no. 1 (2020): 51–53. https://www.jstor.org/stable/26917284.
[91] Business and Human Rights Resource Centre, "2021_TMT_South_America.Pdf," media.business-humanrights.org, March 2021, https://media.business-humanrights.org/media/documents/2021_TMT_South_America.pdf.
[92] Alberto Delgado, "Environmental Law and Practice in Peru: Overview | Practical Law," https://content.next.westlaw.com/, March 1, 2017, https://content.next.westlaw.com/practical-law/document/Id1211227d22711e498db8b09b4f043e0/Environmental-law-and-practice-in-Peru-overview?viewType=FullText&transitionType=Default&contextData=(sc.Default).
[93] Ibid.

tailings and water discharged, among other requirements."[94] Finally, the Technical Board of Irrigation District (ATDR) is the "Operational, functional and planning units oriented towards the conservation and development of the hydric resources within a hydrographic river basin. Their function is to administer waters for agricultural and non-agricultural uses, in accordance with approved cultivation and irrigation plans."[95]

As lithium mining grows in importance and necessity worldwide, Peru will need to rely heavily on their pre-existing laws and agencies that enforce environmental protections and community safety.

RECOMMENDATIONS:
Comprehensive Hydrogeological Analysis
A total site wide detailed hydrogeological study needs to be completed to determine the ground water levels and how these may impact on water inflows into the pits, geotechnical stability issues and potential impacts on site wide infrastructure."[96]

B. The Altiplano, Water Scarcity, and Lithium Mining's Potential Consequences

With respect to mining, the fact that mining operations consume less than 2% of the water resources of Peru understates the significance of the effect of mining operations on water scarcity. According to the studies presented in the 2015 Columbia Capstone, several mining concessions are based in source or headwater areas in elevated areas of the Andes Mountains. Thus, the siphoning of water upstream can change stream flows, resulting to droughts or even flooding in areas downstream.[97] Moreover, extraction from surface and groundwater during mining operations may nevertheless result in undue competition for access to water in geographic areas where access to water is limited, especially in areas where scarcity is due to lack of water infrastructure.[98]

While 2016 engineering consultants estimate that there are sufficient water resources in the Puno region to support hard rock lithium mining, "the availability of water has not been assessed during the PEA and it is recommended that the availability of suitable water be quantified in later stages of the Project's development."[99]

The 2015 Columbia Capstone also discussed the issue of a lack of comprehensive inventory of water resources in the country such as river basins and aquifers, which provides a challenge in identifying the precise amounts of water consumed by the various stakeholders.[100] The 2015 Columbia Capstone pointed to ANA's lack of capacity and power, and recommended that the government establish a comprehensive and compulsory monitoring system of water

[94] Paula Pantigoso et al., "Peru's Mining & Metals Investment Guide 2019/2020" (EY, Peru ministry of Foreign Affairs, ProInversion, 2019), https://cdn.www.gob.pe/uploads/document/file/292934/EY_Perus_Mining_and_Metals_Business_and_Investment_Guide_2019-2020.pdf.
[95] Ibid.
[96] draglobal.com, "DRA Global Annual Report 2020," 2020, https://www.draglobal.com/media/av5jsgkw/dra-global-2020-annual-report.pdf.
[97] Ibid.
[98] Salem, An analysis of Peru: Is water driving mining conflicts?," 2.
[99] DRA Pacific, Falchani Lithium Project, NI 43-101 Technical Report – Preliminary Economic Assessment" 20 (2020).
[100] Ibid., at 136-137.

use, to be independently managed by representatives of various stakeholders and institutions such as universities, industrial organizations, and volunteer monitoring groups.[101]

RECOMMENDATIONS:
Conduct a detailed hydrogeological study in Carabaya province
The government should determine the groundwater levels and how they may affect water inflows into the pits, geotechnical stability of the bedrock, and longevity of site wide infrastructure, then use this survey to monitor and record water sources in mining regions.
Monitor real-time water usage in mines
The government should monitor mining operations to install a device that records water usage prior to the commencement of the project and ensure that companies comply by making this a requirement in the EIA. This will allow MINEM to collect baseline data and make decisions on regulations in real time based on water usage.
Investigate water treatment options
Ensure that the water being used is recycled, to the extent that is possible in order to not exacerbate water scarcity issues in the region.

C. Water Pollution and Health Hazards for the Puno Region

None of Puno's 13 provinces have access to proper sewage treatment plants to clean wastewater.[102] This makes health concerns surrounding lithium mining's impact on water pollution especially salient. The 2019 Columbia Capstone, which discussed short term recommendations to fulfill Peru's Mining Vision 2030 long term goals, discussed that there is considerable drainage of acid and other ancillary products that occurs during the mining process. Annually, over 13 billion cubic meters of pollutants are released into the waters of Peru because of mining activities,[103] and it is estimated that in the last two decades, more than an estimated 2,700 tonnes of mercury have been dumped into Amazonian rivers, contaminating water, aquatic organisms, and human populations that consume water and fish.[104] Studies have also shown that 21 of the 120 rivers in Peru with an extension larger than 200 kilometers are polluted, and 16 of the 21 most polluted rivers are in mining regions.[105]

Significantly, as mentioned previously, a PEA of the Falchani Project discloses that the water needed for the project would be sourced from local river sources, and that the availability of water has not been assessed during the said study. The PEA recommends that the availability of suitable water be quantified in later stages of the Project's development.[106] Additionally, lithium is a highly soluble metal, and its impact on health for regional communities should be carefully monitored.

[101] Ibid., at 137.
[102] Maria-Pia Negro Chin, "Dirty Rivers in Puno," Maryknoll Magazine (blog), July 1, 2017, https://www.maryknollmagazine.org/2017/07/dirty-rivers-puno-contamination/.
[103] Cyprian Christian, Niwa Dwitama, Prakruti Joshi, Eleanor Katz, Alexander Rustler, Eugenia Simo Garcia, Sean Srichankij, Zulpha Styer, Mo Wang, "Mining Vision 2030: Making it a Reality," 16, https://www.sipa.columbia.edu/academics/capstone-projects/mining-vision-2030.
[104] "1. Water resources in Peru: The state of play," Organisation for Economic Co-operation and Development, last accessed Feb. 18, 2022, https://www.oecd-ilibrary.org/sites/c815cf26-en/index.html?itemId=/content/component/c815cf26-en.
[105] Salem, "An analysis of Peru: Is water driving mining conflicts?," 2.
[106] **"F**alchani Lithium Project – NI 43-101 Technical Report – Preliminary Economic Assessment," DRA Pacific, accessed Feb. 18, 2022, https://minedocs.com/20/Falchani_PEA_03192020.pdf.

RECOMMENDATIONS:
Properly enforce mining regulations on water pollutants
Increase decentralization to regional level actors for implementation and enforcement. The Peruvian government should consider transferring environmental enforcement powers and functions from the central government to local and regional governments but keep a right of review in the central government. To successfully implement decentralization and increase community involvement, the government should build the institutional capacity of local and regional governments by increasing funding, training, and expertise to properly deal with mining-related responsibilities.

D. Lithium Mining Waste Disposal in Peru: Environmental Considerations of Tailings Dams

Finally, it has been reported that "[l]arge earth-moving equipment has invaded quiet, out-of-the-way towns, and sprawling cattle farms have had new mountains of clay and dirt impede their livestock grazing area and water supply."[107] The risk of water pollution increases without adequate attention to the maintenance and regulation of tailings dams, which are used to store the waste from hard rock lithium mining. Suggestions for adequate evaluation, regulation, and monitoring of tailings dams in Peru can be found in Columbia University's 2021 Capstone Project, "Tailings Dams: A Disaster Waiting to Happen."[108] Lack of tailings dam maintenance can lead to toxic chemical injection into nearby rivers, which can create irreversible damage, even if the dam does not completely fail.[109] These toxic chemicals decrease water quality and oxygen content, which can impact the surrounding communities and environment.[110]

The Falchani Project intends to make use of dry stack tailings with filtered water when beginning lithium extraction.[111] This section on tailings and waste disposal discusses the environmental consequences of inadequate tailings disposal and recommends that MINEM impose regulations on tailings dams to reduce these potential environmental hazards.

The most common practice for disposing of tailings waste is to deposit waste as slurry in impoundments behind dams, as noted by the 2021 Columbia Capstone. Tailings dam failure may lead to disastrous environmental consequences. The 2015 tailings dam collapse at the Samarco mine in Brazil was considered the worst environmental disaster in Brazil's history at the time. It contaminated over 668 km of rivers and watersheds, with tailings waste spread across 39 municipalities. Ultimately, there were 19 fatalities, and three million impacted people living around these contaminated bodies of water.[112] Peru experiences topographic, seismic, and climatological extremes, making the construction and management of tailings dams challenging

[107] Robin Bolton, "Lithium Mining Is Booming — Here's How to Manage Its Impact | Greenbiz," GreenBiz, August 11, 2021, https://www.greenbiz.com/article/lithium-mining-booming-heres-how-manage-its-impact.
[108] "Colombia and Peru: Securing Community Acceptance in Natural Resource Rich Areas | Columbia SIPA," accessed May 6, 2022, https://www.sipa.columbia.edu/academics/capstone-projects/colombia-and-peru-securing-community-acceptance-natural-resource-rich.
[109] Ibid.
[110] Ibid.
[111] "Falchani Lithium Project - American Lithium Corp.," accessed May 6, 2022, https://americanlithiumcorp.com/falchani-lithium-project/.
[112] "5 Years After Disaster, Communities Are Still Fighting for Their Rights," Jan Morrill, last modified Nov. 5, 2020, https://earthworks.org/blog/5-years-after-disaster-communities-are-still-fighting-for-their-rights/.

and increasing the risk of a tailings dam failure.[113] The 2021 Columbia Capstone also discussed the regulations enacted by the Peruvian government in response to concerns regarding tailings management, such as one prohibiting the building of upstream tailings dams, which are more suitable for facilities in areas of low rainfall and low seismic activity,[114] and one prohibiting the aquatic or underwater disposal of wastelands, tailings, and other solid waste from mining activities.

Advances in the development of large capacity vacuum and pressure filter technology have given rise to the option of storing tailings in an unsaturated state, or storing tailings with a decreased water content.[115] As the water content decreases, water recovery rates are increased, and tailings are far more readily able to be used in self-supporting structural situations such as stacks, and eliminating the need for the construction of impoundment dams.[116] These dry stack filtered tailings are ideal in operations located where water is scarce and where terrain conditions make conventional impoundments impractical.[117] While the production of dry filtered tailings is a more expensive operation as compared with conventional methods, studies show that the recovery of water resulting from the use of dry filtered tailings has a cost benefit to the project that offsets the capital and operating costs of the tailings system.[118] The amount of water "stored" in a dry stack facility is typically 25 to 50% less than in a conventional impoundment of tailings.[119] Moreover, dry stack facilities are easier to close and rehabilitate, and require a smaller footprint compared to other surface tailings storage options.[120]

As stated above, the Falchani Project has disclosed that it plans to make use of filtered tailings which would enable the recycling of up to 90% of process water.[121] According to a PEA on the project, the waste slurry will be neutralized, dewatered, and conveyed into a tailings stockpile. [122]

RECOMMENDATIONS:
Improve practices in water resource management pursuant to Mining Vision 2030
The government should require regular check-ups on tailings facilities to ensure that: 1) groundwater is uncontaminated by process water; 2) process water meets acceptable concentrations of heavy metals; and 3) raw water usage is not exceeding proposed quantities.
Require dry stack tailings in mining waste disposal
In lithium mining concession agreements, the government should consider requiring dry stack tailing dams in all lithium mining projects.

[113] Deng, "Tailings Dams: A Disaster Waiting to Happen," 13-14.
[114] "About Tailings," GlobalTailingsReview.org, accessed Feb. 18, 2022, https://globaltailingsreview.org/about-tailings/.
[115] Michael Davies, "Filtered Dry Stacked Tailings – The Fundamentals" (Conference: Tailings and Mine Waste 2011), 1.
[116] Ibid., at 2.
[117] Ibid., at 3.
[118] Ibid.
[119] Ibid.
[120] "Dry Stacking of Tailings (Filtered Tailings), Tailings.info, accessed Feb. 18, 2022, https://www.tailings.info/disposal/drystack.htm.
[121] "Falchani Lithium Project," American Lithium, accessed Feb. 18, 2022, https://americanlithiumcorp.com/falchani-lithium-project/.
[122] Ibid.

III. THE PRESERVATION OF THE ALTIPLANO ECOSYSTEM

Peru's Puno region is home to a variety of flora and fauna: the spectacled bear, vicuña, and flamingos are a few notable species. Lithium hard rock mining has been demonstrated to have a negative impact on wildlife.[123] Lithium mining impacts two aspects of the natural environment: the physical land readjustment, and the output of waste products. Hard rock lithium mining involves relocation of large amounts of earth, which changes the chemical composition of the soil and destabilizes the natural bedrock. For instance, since the initiation of lithium mining, Chile's Salar de Atacama has experienced severe degradation of salt flats, vegetation decline leading to fewer opportunities for grazing animals, heightened daytime temperatures due to reduced vegetation, reduced soil moisture and increased drought conditions in mining areas.[124] Meanwhile, waste products derived from lithium cleansing processes can leach into the surrounding groundwater and river systems, negatively affecting reproductive capacities of native wildlife, specifically amphibians and fish.[125] Flamingos and other water birds suffer from habitat loss and severe illness due to the changing microbial biomass and toxic cyanobacteria produced by hard rock mining. Considering the arid climate of the altiplano, dust from the erosive activities of hard rock mining contributes to air pollution. This pollution leads to elevated rates of cancer and respiratory diseases in animals and humans. Further, as mining projects and the wildlife in the altiplano compete for limited groundwater, water scarcity and competition are key concerns in lithium mining project development.[126] The threats to regional biodiversity result in an imperiled environment for many of the altiplano's most biodiverse and ecologically valuable land, if left unregulated.

Peru is a signatory of the United Nations Convention on Biological Diversity (CBD) but has not yet ratified the CBD into national or local law.[127] The CBD is the "international legal instrument for 'the conservation of biological diversity, the sustainable use of its components and the fair and equitable sharing of the benefits arising out of the utilization of genetic resources'."[128]

RECOMMENDATIONS:
Require the conduct of a land survey of the Falchani concession area
Prior to lithium exploitation, the government should require the preparation of an independent survey of the land both within and surrounding the Falchani concession area. At a minimum, this survey should determine the base wildlife populations, soil health, biomass density, and aquifer levels. A comprehensive survey must be realized to understand how mining operations, if permitted to proceed, impact the surrounding ecosystem. This can be done in conjunction with the Ministry of Environment and Strategic Development of Natural

[123] Koivula, Nella. "Lithium production, its negative impacts and distribution globally" in Exploring the Negative Impacts of Mining Minerals, ed. Aku Suoknuuti.
[124] Jerez, Barbara, "Lithium extractivism and water injustices in the Salar de Atacama, Chile: The colonial shadow of green electromobility" in Political Geography, Volume 87, May 2021, IBN: 102382.
[125] Sonter LJ, Ali SH, Watson JEM, "Mining and biodiversity: key issues and research needs in conservation science." (Proc. R. Soc. B 285: 20181926, 2018).
[126] Lithium Corporation of America, "Lithium Health Hazard Evaluation Report". Niosh, July 1981.
[127] "Helping Peru protect and benefit from its biodiversity," UNCTAD, Mar. 8, 2016, https://unctad.org/es/node/1293.
[128] Glowka, Lyle, Françoise Burhenne-Guilmin, and Hugh Synge. 1994. A guide to the Convention on Biological Diversity. Gland, Switzerland: IUCN--the World Conservation Union.

Resources subdivision and local community members. Starting with quantifiable metrics will enable ecological impact to be measured according to the standards set by the Chartered Institute of Ecology and Environmental Management.
Evaluate current policies
The 1997 Law on the Conservation and Sustainable Use of Biodiversity instructs each ministry to introduce and implement sectoral programs and plans for preserving biodiversity in its agriculture, education, health, roads, and transportation. The National Commission for Biodiversity (CONADIB) and National Environmental Council (CONAM) should conduct a thorough evaluation of policies and frameworks developed by ministries within Puno to this effect.
Create buffer zones between mines and invaluable ecosystems
Like Australia, the government should impose regulations that mining equipment, vehicles, and heavy machinery can only be transported through the least disruptive route to the mine, as to not interfere with local communities, ecosystems, and agriculture.
Ratify the United Nations Convention on Biological Diversity (CBD)
Encourage the Peruvian Legislature to ratify the CBD. This would allow Peru to receive funding from the UN to enforce its biodiversity goals and maintain rich flora and fauna in the Puno region.

IV. CURRENT ENVIRONMENTAL LAWS AND REGULATIONS WITH APPLICATIONS TO LITHIUM DEVELOPMENT

This section serves to assess Peru's mining laws, recognize its strengths, and provide recommendations for further strengthening laws in relation to lithium development. To respond to the environmental problems posed by mining, the Peruvian government has enacted various law for the environment and for different stages of mining development.

All mining activities are governed by the GEL, as discussed in the background section of this report.[129] Additional environmental regulations that govern mining at the national level include Regulations for the Protection of the Environment applicable to the development of Mining Exploration Activities and the Environmental Regulations for Mining and Metallurgic Activities. These regulations, in conjunction with the General Environment Law, set forth the cost internalization principle, which requires that extractive companies remedy any environmental harm they create through prevention and mitigation measures. These regulations also ban mining from certain protected areas in Peru.

Also relevant to mining is the Law for the National System of Environmental Impact Assessment[130] and the Supreme Degree that governs it[131], which established the National Economic Impact Assessment System (SEIA). The SEIA sets the procedures for Environment Impact Assessment (EIA) and Strategic Environmental Assessment (SEA) within the government. The EIA is an environmental study required to be carried out and approved by the corresponding

[129] See generally General Environment Law [Law No. 28611] (1992) (Peru).
[130] See generally National System of Environmental Impact Assessment (Law 27446) (Peru).
[131] See generally Supreme Decree No. 019-2009-MINAM (200) (Peru).

sectoral authority before the development of investment projects that can negatively impact the environment. Investment projects are classified based on their risk. Projects that may cause significant negative impacts on the environment such as large mining projects are classified as Category III which requires the mining company to file a detailed EIA to be carried out prior to commencing mine development and operations. The EIA must be approved by the National Service of Environmental Certification for Sustainable Investment (SENACE) before mining activities may commence. Presently, there are no environmental regulations specific to lithium mining.[132]

In addition, Law 28090 requires companies to submit a Mine Closure Plan before mining permits can be authorized, allowing for the protection of the environment if mining activities are abandoned[133]. This requires mining companies to provide financial assurance for closure liabilities and requires them to outline the activities necessary to rehabilitate the area used or disturbed by the mining activity. The closure activities must be guaranteed by financial assurances such as closure plan surety bonds, performance bonds, and trusts. The current legislation emphasizes only economic aspects of mine closure, but not the social and land use aspects of mine closure.

Finally, MINEM establishes key regulations. These are Environmental Regulations for Mining Exploration Activities, approved by Supreme Decree 020-2008-EM and Environmental Regulations for Mining and Metallurgic Activities, approved by Supreme Decree 040-2014-EM. These regulations establish the standards for the protection of the environment that must be accomplished in the corresponding environmental and social management instrument (ESIA) for exploration and exploitation of minerals, including the environmental obligation and commitments of the mining holders.[134]

RECOMMENDATIONS:
Improve communication between decentralized agencies.
The decentralization of environmental policies requires greater communication between sectoral agencies for improved implementation and accountability. MINEM, the Ministry of Environment, SERNANP, and SINANPE must communicate national goals and evaluate mechanisms for implementation of the action items determined by each agency. A comprehensive system for monitoring and reviewing National Biodiversity Strategies and Action Plan (NBSAP) implementation should be introduced through cooperation with these agencies.

[132] See generally National System of Environmental Impact Assessment (Law 27446) (Peru).
[133] See generally Mining Closure Act [Law 28090] (Peru).
[134] See generally Environmental Regulations for Mining Exploration Activities [Supreme Decree 020-2008-EM] (Peru); Environmental Regulations for Mining and Metallurgic Activities [Supreme Decree 040-2014-EM] (Peru).

PART 2: POLITICAL & SOCIAL CONSIDERATIONS IN LITHIUM MINING

CASE STUDY:

THE TIA MARIA MINE: COMMUNITY TRUST ABOVE ALL ELSE

Government support and substantial investment in a mining project are not, by themselves, a guarantee of the success of a project. In fact, as the experiences from the Tía María mine show, these factors would be meaningless unless the government and mining operators are able to establish and maintain meaningful ties to the local community founded on the critical principle of trust.

The Tía María copper mine project is worth an estimated USD1.4 billion[135] and located in Arequipa region of Peru was once predicted to generate an approximate 120,000 tonnes of copper over the course of 20 years and create an estimated 9,000 job opportunities.[136] However, since 2009, it has been vociferously opposed by local communities through deadly encounters with local police officers, strikes by miners working in the project, and most recently in 2019, creating blockages in roads surrounding the mine.

In September of 2021, Pedro Francke, Peru's economy and finance minister, affirmed that the national government was no longer interested in pursuing the Tía María copper mine project due to the social and political infeasibility of the project. "Tía María has already gone through three or four waves of community and governmental attempts of repression and death. I don't think it's appropriate to try again if you've already crashed into a wall of social resistance once, twice, three times…," he said.[137] The minister's statement echoes the sentiments of Peru's president, Pedro Castillo, who had once singled out the project as a non-starter under his administration.[138] The present administration's statements concerning the project are in stark contrast to the positions of previous administrations. For instance, former President Humala once publicly stated his support for the project and has mentioned that the Government should work to convince the protestors to give the Tía María project a chance.[139]

[135] Reuters Staff, "Peru to rethink approval for Tia Maria copper project," Reuters, July 25, 2019, https://www.reuters.com/article/peru-southern-copper-idCNL2N24Q12I.
[136] Ellie Dean, "Peru minister shoots down Southern Copper's US$1.4 bn mine," Business Chief, September 30, 2021, https://businesschief.com/leadership-and-strategy/peru-minister-shoots-down-southern-coppers-usdollar14bn-mine
[137] Cecilia Jamasmie, "Peru minister says $1.4bn Tia Maria mine a 'no go,'" Mining.com, September 28, 2021, https://www.mining.com/peru-minister-says-1-4bn-tia-maria-mine-a-no-go/.
[138] Ibid.
[139] See Columbia Capstone 2020.

Ultimately, as Columbia Capstone 2020 reports, the lack of transparency and honesty, coupled with Southern Copper's devastating environmental footprint and corrupt track record of its other operations in Peru, aggravated the already negative image of the company, which to this day overshadows the attempts of Southern Copper and the Peruvian Ministry of Energy and Mines to push through with the project.

In contrast to the Tía María project, the Las Bambas copper mining project in the Apurimac region of Peru has had an inconsistent relationship with the local communities, highlighting the importance of not just establishing meaningful ties with the local communities, but also actively maintaining them. Similar to Tía María, communities in Las Bambas have protested its Chinese state-owned operator through means such as roadblocks which led to deadly clashes with the police. However, such movements ended when the national government intervened and attempted to mediate the disagreements between the operator and local communities. This happened when Prime Minister Salvador del Solar signed an agreement with the mine's manager and community leader to end a road blockade, and in 2021 when Prime Minister Mirtha Vasquez personally met with representatives from a local community in October 2021, which also resulted in the lifting of a road blockade.[140] More recently, there are reports that a new conflict may arise in the coming months, as the government has recently approved an expansion of the Las Bambas copper mine despite ongoing outrage from affected communities. This serves as another example of how the government is prioritizing the interests of the investor over the interests of the community.[141]

The experiences at Tía María and Las Bambas demonstrate that the lack of a trustworthy relationship with the community can dictate the social viability of a mining project, notwithstanding prior staunch government support for investors. These stories prove that in the development of the Peruvian lithium mining sector, the government and other stakeholders must prioritize the establishment and maintenance of firm social ties founded on trust with affected communities.

[140] Reuters, "Peruvian communities agree to lift road blockade affecting Las Bambas mine," Mining Weekly, Oct. 28, 2021, https://www.miningweekly.com/article/peruvian-communities-agree-to-lift-road-blockade-affecting-las-bambas-mine-2021-10-28.
[141] Syndicated Content, "Peru approves expansion of Las Bambas copper mine despite protests," WHTC, Mar. 24, 2022, https://whtc.com/2022/03/24/peru-approves-expansion-of-las-bambas-copper-mine-despite-protests/?emci=4dc420c9-45ac-ec11-997e-281878b83d8a&emdi=8c6f9bce-46ac-ec11-997e-281878b83d8a&ceid=8382242.

RECOMMENDATIONS:
Require liaison officers from the national government or a third-party NGO to monitor community sentiments
As the relationship between the mining company and communities change over the course of the lithium and uranium mining projects, it will be important for the government to be aware of any changes in community sentiment. This will put the government in a position to intervene in the case of discontentment or disagreement. These NGOs or experts can relay the results of their assessments to the regional government, who should use this knowledge when advocating for their citizens to the national government as it negotiates with mining companies.
Adopt similar or suggested regulations which enforce community agreements
Community agreements are only as valuable as they are enforceable. See *Appendix C* for recommended regulations which the government may consider adopting to create a legally enforceable regime for the community agreements. The draft regulation is patterned after the World Bank Group Community Development Agreement Model Regulations & Example Guidelines Report and has been adapted to the development and regulatory requirements of the Peruvian government. This will give both the community and mining companies confidence that their agreements will be monitored, enforced, and that they can bring legal action if any provisions of the contract are breached.

I. RECENT EVENTS AND POLICY MEASURES ADDRESSING LITHIUM MINING

A. Political Interests and Decentralization

President Castillo assumed the presidency in July 2021 with aspirations to change the mining landscape.[142] One of Castillo's hopes is for the country to significantly benefit from Peru's mining wealth.[143] This sentiment continued into 2022, as Castillo indicated his interest in re-negotiating the contract with American Lithium.[144] Castillo likely wants this re-negotiation to occur so that Peru can benefit from lithium processing production. Instead of selling raw, unprocessed materials, the Government wants to sell a more valuable and processed product to benefit more from the lithium's value.[145] In addition, it also wants to create factories to create a higher value lithium product, which will lead to more high-paying jobs.[146] While this political aspiration by the Castillo government is likely achievable; this will not occur in the short term since other steps would need to occur first.

[142] María Cervantes, "Perú busca mayor beneficio de cadena de valor de litio," Bloomberg Línea, Jan. 20, 2022, https://www.bloomberglinea.com/2022/01/20/peru-busca-mayor-beneficio-de-cadena-de-valor-de-litio/.
[143] Ibid.
[144] Ibid.
[145] Isabella Cota, "La fiebre del litio despierta los nacionalismos en América Latina," El País, Feb. 7, 2022, "https://elpais.com/internacional/2022-02-08/la-fiebre-del-litio-despierta-los-nacionalismos-en-america-latina.html.
[146] Ibid.

Mining Vision 2030 advocates for decentralized regional groups to be formed to better suit the needs of the local community. In fact, the government has committed to ensuring decentralization by utilizing a regional focus within the productive development priorities, starting with a pilot plan. The goal is to 1) establish a specific multi-annual action plan, incorporating mechanisms for the follow-up and monitoring results as well as transparency and accountability; 2) design and implement public-private financing and cooperation mechanisms with high level government support; 3) strengthen the existing capacities including civil society organizations; 4) search for synergies with Regional Development Agencies and other spaces should these already exist; and 5) in the pilot plan, include the promotion of clusters, linkages and productive diversification.

One initiative the government can take to benefit Peruvians is to give additional power to regional governments to focus on achieving community acceptance of mining projects. Relationships between communities and mining companies are often in flux. In other mining projects in Peru, common complaints by local residents are that there are negative environmental consequences, the mining project does not bring anticipated infrastructure or jobs, and the mining activity is disruptive to daily life.[147] Regional governments are more likely to be better suited than the national government in engaging with and understanding the needs of communities. The national government represents all citizens of Peru, and as such, it serves varying communities whose priorities regarding lithium mining will likely be different. Furthermore, the national government is more removed geographically from the communities that will be impacted by lithium mining. The regional government of Puno, where the Falchani Project is located, is directly responsible and accountable to the citizens of Puno. The regional government of Puno can engage with its citizens to understand and promote policies that are in accord with its constituents regarding the Falchani Project.

In Argentina, regional governments have aided their constituencies in the mining process. In the past two years, there has been over USD8.5 billion invested in Argentina's mining sector and there are upcoming projects in the country that are valued at USD35 billion.[148] Within regions with mines, salaries tend to be around two-to-three times higher than in other regions of the country.[149] The government of Jujuy, for example, owns an 8.5% ownership stake in a lithium mine in its province.[150] This gives the government access to profits and allows it to take part in overseeing the mine. Also of note, in 2021, out of the 17 large mines in operation in Argentina, there were no labor or environmental accidents reported.[151] Although all these outcomes cannot be attributed to its provincial system alone, it is still worth acknowledging these benefits. In Argentina, "mining is local," says consultant Emily Hersh.[152] Hersh means that the mining projects

[147] Marcelo Rochabrun, "Peru's poor Andean hamlets, backed by state, unleash anger at mines," Reuters, Dec. 14, 2021, https://www.reuters.com/markets/commodities/perus-poor-andean-hamlets-backed-by-state-unleash-anger-mines-2021-12-14/.
[148] El Economista, "Cobre, oro, litio y plata: la minería está en condiciones de recibir US$ 20.000 millones en inversiones directas," El Economista, February 20, 2022, https://eleconomista.com.ar/economia/cobre-oro-litio-plata-mineria-esta-condiciones-recibir-us-20000-millones-inversiones-directas-n50754.
[149] Ibid.
[150] Jonathan Gilbert, Andrew Rosati, and Ethan Bronner, "How China Beat Out the U.S. to Dominate South America," Bloomberg, Feb. 17, 2022, https://www.bloomberg.com/news/articles/2022-02-17/china-is-south-america-s-top-trading-partner-why-can-t-the-us-keep-up.
[151] El Economista, "Cobre, oro, litio y plata: la minería está en condiciones de recibir US$ 20.000 millones en inversiones directas," El Economista, February 20, 2022, https://eleconomista.com.ar/economia/cobre-oro-litio-plata-mineria-esta-condiciones-recibir-us-20000-millones-inversiones-directas-n50754.
[152] Emily Hersh, "LatAm in Focus: Can Latin America Power Up Its Lithium Prospects?," interview by Carin Zissis, Latin America in Focus, Americas Society/Council of the Americas, https://www.as-coa.org/articles/latam-focus-can-latin-america-power-its-lithium-prospects.

are negotiated at the provincial level, as guaranteed by Argentina's federalist constitution. Hersh adds that since the mining projects impact the local areas first, the agreements with mining companies will be catered to local needs.[153] The Deputy Minister for Mining Development specifies that the mining companies are responsible for ensuring local employment and providing high salaries.[154] Although Peru and Argentina have different political systems and are unique countries, it is worth evaluating Argentina's approach to mining through the role taken by provincial governments.

Pursuing decentralization does have its own challenges. Argentina's system cannot be implemented in the same manner for Peru. Argentina's provincial governments have explicit constitutional authority to engage in contracts with foreign firms. However, in Peru, the federal government is more involved in mining contracts.[155] To learn from Argentina, Peru's federal government can enshrine community acceptance responsibilities to regional governments, while the federal government still oversees other elements of the mining contract and regulation. Additionally, many barriers to decentralization and community sovereignty can be addressed by national community education programs. According to Brenda Silva, legal expert and attorney for MINEM, there is a lack of education about what the laws are for mining operations. The citizenry does not know enough about laws and mining companies, such as the basic requirements that mining companies need to comply with. While communities and mining companies might find these requirements to be "bureaucratic", they are necessary and can have major impacts on the environment and community sentiment. Due to high government turnover, lack of expertise around mining policies might be a larger issue that educational programs can address as well.[156]

Another challenge is the issue of compensation. As a result of the regional government's role, it will seek additional monetary value from the mining companies in the form of taxes. Additional income received by the government does not guarantee that citizens will benefit. The owners of the Las Bambas mine have paid over USD1.21 billion in taxes since it began operating in 2016, but the poverty rate in the region of the mine has not changed.[157] As of 2020, the poverty rate was 35%.[158] Even if governments earn tax revenue from mines, ensuring the community benefits continues to remain a challenge. Political instability in Peru will be another challenge in using a decentralization approach. Since 2018, Puno has had three governors. Former governor Aduviri was arrested for his involvement in protests that led to violence.[159] He served as governor of Puno from 2018 until his arrest in 2020.[160] Former governor Luque took over in 2020, and was arrested in October 2021 for his involvement with criminal groups.[161] While giving more power to

[153] Ibid.
[154] El Economista, "Cobre, oro, litio y plata: la minería está en condiciones de recibir US$ 20.000 millones en inversiones directas," El Economista, February 20, 2022, https://eleconomista.com.ar/economia/cobre-oro-litio-plata-mineria-esta-condiciones-recibir-us-20000-millones-inversiones-directas-n50754.
[155] Emily Hersh, phone call with author, March 8, 2022)
[156] Interview with Brenda Silva on April 19, 2022.
[157] Marcelo Rochabrun, "Peru's poor Andean hamlets, backed by state, unleash anger at mines," Reuters, Dec. 14, 2021, https://www.reuters.com/markets/commodities/perus-poor-andean-hamlets-backed-by-state-unleash-anger-mines-2021-12-14/.
[158] Ibid.
[159] DW. "Peru: Indigenous governor sentenced to prison for anti-mining protests," DW, August 15, 2019, https://www.dw.com/en/peru-indigenous-governor-sentenced-to-prison-for-anti-mining-protests/a-50031543.
[160] Ibid.
[161] Andina, "Ordenan nueve meses de prisión preventiva para gobernador regional de Puno Agustín Luque," Andina, Nov. 9, 2021, https://andina.pe/agencia/noticia-ordenan-nueve-meses-prision-preventiva-para-gobernador-regional-puno-agustin-luque-868732.aspx.

the regional government can improve the democratic system, this action relies on stability within the regional government. Due to the recent gubernatorial turnover, regional government institutions should aspire to become stronger in order to be entrusted with advocating for local community needs regarding mining development.

B. Evaluation of National Politics & Effect on Lithium Development

In Puno, wealth generation has traditionally been trading and agriculture based. The shift from agriculture to mining as the dominant economic output in the Macusani district is a recent phenomenon, with mining taking precedence over agriculture in 1997.[162] While mineral extraction brings unprecedented wealth to the country of Peru, it can negatively affect environments and livelihoods. Since the Andean mountain range is one of the world's most arid places, freshwater is a key social resource that is being actively reduced by climate change.[163] Second, the relative novelty of heavy metal mining as the dominant economic sector means that social and environmental protections in Peru are not as strong as they are in Western countries. In an interview, mining expert Pepe Julio Gutierrez illustrated that while Canada and Australia prohibit toxic chemicals like cyanide in the processing of copper and gold ore, Peruvian mining companies utilize cyanide with impunity. Similar issues exist regarding the use of dynamite and open-cast methods in hard rock mining operations, practices that increase air pollution and lead to higher rates of lung infections and certain types of cancers.[164]

Profits from mining have soared due to rising commodity prices and increased demand for heavy metals.[165] However, low taxes in Peru (13% compared with 85% in Bolivia) have reduced the amount of support to the local community.[166] Akram Asanov of Revenue Watch International completed an evaluation of Peruvian mining activities in comparison to their economic effects on the local communities and found that the presence of extractive industries in the Andes has no positive impact on poverty and inequality at a regional level.[167] Despite the dominance of mining in the Peruvian economy, accounting for nearly 70% of export earnings, only 1% of Peruvians are employed in the sector.[168] In 2006, companies were asked to make a temporary and voluntary contribution to supporting local economic and social infrastructure, contributing USD60 million. Had a 50% tax on extraordinary profits been imposed, the companies would have contributed USD1.44 billion.[169] However, the financial advantage of foreign industries in contractual mining agreements seems to be changing. In 2020, President Castillo promised to increase the state's share of mining profits to 70% and use the taxes to improve healthcare, education, and income inequality.[170] While no change has yet been made, in 2021, mining tax revenues generated PER6.6 billion (USD1.67billion), up from PER 4.41 billion (USD1.11billion) in 2020.[171]

[162] Alfredo C. "The Mineral Industry of Peru" (PDF). 2006 Minerals Yearbook. United States Geological Survey (May 2008).
[163] Poveda, German et all. " High Impact Weather Events in the Andes," in Front. Earth Sci., 29 May 2020.
[164] Lithium Corporation of America, "Lithium Health Hazard Evaluation Report". Niosh, July 1981.
[165] Campbell, Rebecca, " Mining & metals 2022: ESG and energy transition – the sector's biggest opportunity." (White and Case: 03 February 2022).
[166] PwC Peru, "Doing Business in Peru 2020: Mining Chapter", 2020.
[167] Baird, Vanessa. "Agra Si, Mina No" in The New Internationalist. November 2011.
[168] John Crabtree, ed, Fractured Politics: Peruvian democracy past and present, Institute for the Study of the Americas, University of London, 2011.
[169] CooperAcción, Lima, August 2011.
[170] Aquino, Marco "Peru presidential candidate outlines new taxes, royalties for miners." Reuters: 17 May 2021.
[171] Zachary Skidmore, "Peru reports a 60% increase in tax revenues from mining," Mining Technology, January 10, 2022, https://www.mining-technology.com/news/minem-tax-revenues-mining-peru/.

Corruption in Peru, specifically through concession kickbacks and contract signing fees for central office legislators and regional policymakers, is a major detriment to fair and equal social policies in the mining sector. Having passed laws to attract extractive industries from abroad, former president Alan García had lined up some USD40 billion worth of foreign investment in mining projects for the next decade.[172] After being accused of taking bribes from Brazilian construction company Odebrecht and funneling mining kickbacks into his own personal accounts, Mr. Garcia took his own life ahead of his arrest by state police.[173] According to interviews with those familiar with the politics and laws of Peru, there are regions that have significant investment that have no basic services due to lack of regional prioritization. This sometimes comes in the form of large projects that are over-billed so that officials and builders can split the proceeds. While the Órgano de Control Interno is partially responsible for monitoring and enforcement, it would still be beneficial to have a governing body which can provide fiscal oversight and give sanctions if money is not spent well.[174] Brenda Silva, legal expert and attorney for MINEM, suggests that the solution is to give any mining project money to the regional government, but the key is to have the oversight mechanism in place before doing so.[175]

Maintaining private security forces and using force against protestors is another major challenge that has plagued Peru's mining sector and has attracted the attention of international human and civil rights groups. Typically, mining companies would enter into agreements with the national police for the latter to act as private security forces of these companies in exchange for compensation.[176] Thus, these security forces would have the dual role of guaranteeing public order and defending the interests of the company.[177] An investigation by Convoca.pe and CONNECTAS showed that, in the past 17 years, extractive sector companies involved in socio-environmental conflicts in Peru signed security and protection agreements with the national worth over USD18 million.[178] Most of these agreements, 158 of 181, were signed between police and companies in the mining sector. Twenty of these contracts were signed or were in force during clashes between police and local populations that resulted in deaths and injuries.[179]

C. Mining Protests in Puno: The Santa Ana Mine

Since 2014, protests have been continuous in most areas of the country over natural resource division and issues with environmental, social and economic effects of mining. From 2011 to 2015, 38 people have died in circumstances where it appears the Policía Nacional del Perú used excessive force, and the majority of these deaths have not been properly investigated.[180] Of the 233 cases of social conflict recorded by Peru's Public Ombusdman in April

[172] Andrea Zarate and Nicholas Casey, "Alan García, Ex-President of Peru, Is Dead After Shooting Himself During Arrest," New York Times, Apr. 17, 2019, https://www.nytimes.com/2019/04/17/world/americas/alan-garcia-dead.html.
[173] Taj, Mitra. " Peru's Garcia, former president and political chameleon, kills himself to avoid arrest", Reuters: 17 April 2019.
[174] Interview with Brenda Silva on April 19, 2022.
[175] Interview with Brenda Silva on April 19, 2022.
[176] Convoca.pe, "Mining and oil companies paid more than US$ 18 million to the Peruvian Police for private security" (Sigma Awards: 11 November 2021).
[177] Ibid.
[178] Ibid.
[179] Luis Enrique Pérez, "Mineras y petroleras pagaron más de US$ 18 millones a la Policía por seguridad privada," Convoca.pe, Nov. 11, 2021, https://convoca.pe/investigacion/mineras-y-petroleras-pagaron-mas-de-us-18-millones-la-policia-por-seguridad-privada.
[180] "Peru: The price of protest must not be death," Amnesty.org, May 26, 2015, https://www.amnesty.org/en/latest/news/2015/05/peru-the-price-of-protest-must-not-be-death/.

this year, more than half had to do with environmental issues and 70% of conflicts were related to mining.[181] One of the biggest ongoing conflicts is over the Santa Ana Project, a silver mining operation that is currently suing the government of Peru over the cancellation of its mining concessions in the International Centre for Settlement of Investment Disputes. In May 2011, protests involving blockades, shutdowns, walkouts, and 'eco-ethno' rhetoric that is different from the traditional "save the earth" eco rhetoric of the North ultimately closed all mining projects in Puno for three years.[182] 25,000 protesters, many of whom came from the Indigenous Aymaran and Quechuan ethnic groups, were mobilized. According to an investigation conducted by the New International, "Puno came to a standstill as an indefinite strike was declared. Main highways were blocked with boulders, including the busy frontier with Bolivia at Desaguadero."[183]

The years of protest and closure of the mine cost the government an estimated USD117 million, leading to government action against both protestors and Bear Creek Mining Corporation for their failure to resolve outstanding human rights issues.[184] Former President Alan García revoked the Canadian multinational Bear Creek's mining license, as the Santa Ana mine was "no longer in the national interest" after years of failed negotiations and human rights violations. García ruled that no new mining concessions would be approved in the region for a period of three years, and that measures would be put in place to improve consultation with local residents for the development of mining and energy activities. However, the government also took action against protesters in a way that international human rights organizations considered a break of constitutional protections for civilian protests. In 2017, eighteen Aymaran indigenous spokespersons faced criminal trials brought against them for participating in the 2011 protests against the Santa Ana mine.[185] On June 28, seventeen of those accused were acquitted, but in 2019 protest organizer and Peru's indigenous governor Walter Aduviri was sentenced to 6 years in prison and a fine for his participation in the protests.[186] The 39-year-old was found guilty of disturbing the public order, but he was not present at the ruling and had ignored a detention order prior to the trial. After taking the case to the Supreme Court, his sentence was shortened to four years and prison term suspended.[187]

RECOMMENDATIONS:
Regional governments should take a leading role in advocating for citizen's wishes for local mining projects
Regional governments have made clear their desire for decentralization in Peru's government structure. This is based in the idea that regional governments have more knowledge of the local community relationship with mining companies. Regional governments are therefore in the most effective spot to advocate for the needs of their citizens around conflicts and concerns with the mining projects.

[181] Reporte de Conflictos Sociales No 86 nin.tl/nm3Bwe.
[182] Baird, Vanessa. "Peruvians Rise Up Against the Mines," in The New Internationalist, 1 October 2011.
[183] ibid. The New Internationalist.
[184] Bear Creek Mining Corporation v. Republic of Peru, ICSID Case No. ARB/14/21. (ICSID 2006).
[185] Terra Justa, " The Aymarazo – Criminalisation of Protest in Peru." KR Foundation, 11Novermber 2017.
[186] Reuters Staff, "Peru court orders indigenous governor of mining region to 6 years in prison", Reuters, 14 August 2019, https://www.reuters.com/article/uk-peru-mining-idUKKCN1V4232.
[187] Fernández, Liubomir, "Puno: suspension of Governor Walter Aduviri annulled". The Republic, December 24, 2020.

II. INTERNATIONAL HUMAN RIGHTS IN MINING: LAWS AND STRUCTURES

Under the international human rights regime, including treaties to which Peru is a party, as well as customary international law, Peru has the responsibility of protecting its citizens from any human rights abuses that may occur as a result of lithium extraction. Such treaties include, but are not limited to, the ICCPR, the ICESR, the Convention Against Torture (CAT), the Convention on the Elimination of Discrimination against Women (CEDAW), and the Convention on the Rights of the Child (CRC). Peru has also ratified the American Convention on Human Rights and is subject to its terms as well as the Jurisdiction of the Inter-American Court and Commission on Human Rights.[188] Meeting the obligations outlined in these treaties often requires working with and monitoring corporations to prevent such abuses from occurring. This is particularly relevant in the case of the mining industry, which historically has been a source of gross human rights violations.[189] The United Nation Guiding Principles for Business and Human Rights (UNGPs) offers guidance on how nations can meet their human rights obligations when corporations are involved, and how such corporations should cooperate to ensure rights are being observed in their operations.[190] Some human rights that are particularly vulnerable during mining activities and should be taken into consideration in the case of lithium extraction, are the rights concerning labor, security and gender.

A discussion with the Vice Minister of Mines for MINEM indicates that one of MINEM's top priorities and concerns with lithium development is ensuring that human rights are respected and violations are reduced. The Vice Minister recognizes that, as companies show interest in exploring and exploiting the resource, it should be the company's duty to respect the human rights of the local people.[191]

A. Security Concerns in Lithium Mining

Mining is often controversial to the communities in which it takes place, as such, it has become practice for the companies to provide significant security for their benefit in the form of engaging either a private security firm or the public police force.[192] This has serious human rights implications and has too often led to violations of these rights in the communities in which mining takes place.[193] In particular, violations of rights due to security in mining often involve the right to freedom of expression, the right to life, and the right to be free from torture. As a result, policy and regulation involving the exploitation of lithium should take these rights into special consideration.

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[188] Treatybody internet, accessed May 7, 2022, https://tbinternet.ohchr.org/_layouts/15/TreatyBodyExternal/Treaty.aspx?CountryID=136&Lang=EN.; Oas, "Organization of American States: Democracy for Peace, Security, and Development," OAS, August 1, 2009, https://www.oas.org/en/iachr/mandate/Basics/conventionrat.asp.
[189] "Oil, Mining, and Natural Resources," Oil, Mining, and Natural Resources | Human Rights Watch, August 10, 2021, https://www.hrw.org/topic/business/oil-mining-and-natural-resources.
[190] "Guiding Principles on Business and Human Rights - Ohchr.org," accessed May 7, 2022, https://www.ohchr.org/sites/default/files/Documents/Publications/GuidingPrinciplesBusinessHR_EN.pdf.
[191] Interview with the Vice Minister of Mines at MINEM. April 19, 2022.
[192] "Protecting Your Community - Cultural Survival," accessed May 7, 2022, https://www.culturalsurvival.org/sites/default/files/guide_for_communities_0.pdf.
[193] "Protecting Your Community - Cultural Survival," accessed May 7, 2022, https://www.culturalsurvival.org/sites/default/files/guide_for_communities_0.pdf.

Right to Life

Under art. 6 of the ICCPR, Peru has the obligation to prevent arbitrary deprivation of life.[194] Security and mining in Peru have been linked to the violation of an individual's right to life.[195] It is the government of Peru's responsibility to prevent this from occurring in the exploitation of lithium. This can occur when private or public security for the mine clashes with protestors or trespassers. Peru is particularly responsible when public forces are committing the violations. Peruvian police forces have been associated with past arbitrary killings associated with protests.

Right to be Free from Torture

Under art. 7 of the ICCPR and other international agreements, Peru has an obligation to protect its citizens from torture. Security forces of mines have been linked to allegations of torture. This includes the beating of protestors or the sexual violence against women by security forces.[196]

Freedom of Expression

Under art. 19 of the ICCPR Peru has the obligation to protect freedom of expression, including peaceful protest of mining activities.[197] As such, in the exploitation of lithium, attention should be paid to making sure protests are not prevented or shut down as a result of violence or threats of violence against protestors.

Business Responsibilities

There is a growing understanding in international discourse that not only nation states, but also transnational businesses have a responsibility to uphold generally accepted human rights, such as those outlined in the UN Declaration of Human Rights (UDHR).[198] As such, the government of Peru should work with these businesses to help them achieve human rights goals while exploiting lithium. One way in which mining companies can work to achieve human rights standards is by adhering to the voluntary principles on security and human rights, which are guidelines specifically designed for extractive companies. [199] This is a multi-stakeholder initiative that works with governments, NGO's, and businesses to monitor and produce solutions to the

[194] "International Covenant on Civil and Political Rights," OHCHR, accessed May 7, 2022, https://www.ohchr.org/en/instruments-mechanisms/instruments/international-covenant-civil-and-political-rights.
[195] See above for Tia Maria Mine
[196] See e.g. for example "Peru: Photographs 'Confirm' Torture of Peasants Who Protested against Majaz Mining," Business & Human Rights Resource Centre, accessed May 7, 2022, https://www.business-humanrights.org/en/latest-news/peru-photographs-confirm-torture-of-peasants-who-protested-against-majaz-mining/.; Dana Ford, "Peru Protesters Say Tortured by Police, Miner," Reuters (Thomson Reuters, January 13, 2009), https://www.reuters.com/article/peru-mining-torture/peru-protesters-say-tortured-by-police-miner-idUSN1340444720090113.
[197] "International Covenant on Civil and Political Rights," OHCHR, accessed May 7, 2022, https://www.ohchr.org/en/instruments-mechanisms/instruments/international-covenant-civil-and-political-rights.
[198] "Business and Human Rights - United States Department of State," U.S. Department of State (U.S. Department of State, June 11, 2021), https://www.state.gov/key-topics-bureau-of-democracy-human-rights-and-labor/business-and-human-rights/; "Universal Declaration of Human Rights," United Nations (United Nations), accessed May 7, 2022, https://www.un.org/en/about-us/universal-declaration-of-human-rights.
[199] "The Voluntary Principles on Security and Human Rights," Voluntary Principles on Security and Human Rights, March 25, 2022, https://www.voluntaryprinciples.org/.

human rights issues involving security and mining.[200] It advises countries with mining projects to "promote transparency and good corporate social responsibility practices," with companies that are mining within the country.[201] The principles suggest that human right risk assessments be completed, companies work together with public security, and that private security should be consistent with the voluntary principles.[202]

Due Diligence

In addition to multi-stakeholder initiatives such as the Voluntary Principles, countries can implement due diligence requirements for corporations in fields that may be particularly susceptible to human rights abuses, such as those in the extractive sector. Human Rights due diligence can be defined as the step taken by a corporation to manage both current and future human rights risks.[203] This normally includes," Identifying and assessing actual or potential adverse human rights..., Integrating findings from impact assessments across relevant..., Tracking the effectiveness of measures..., [and] Communicating on how impacts are being addressed."[204] Although many companies have enacted due diligence procedures voluntarily, some jurisdictions, such as the EU, and France, have enacted, or are in the process of enacting, laws requiring companies under their jurisdictions to follow certain due diligence procedures.[205]

Human Rights and Security in Peru

In 2018, a legislative and institutional framework for human rights was submitted to the UN Human Rights Council on the topic of human rights in the mining sector that stated:

> In Peru, international human rights treaties enjoy constitutional status and take precedence over domestic legislation. The State also makes significant efforts to comply with international standards, especially those of the United Nations and inter-American human rights systems, to deliver on the 2030 Agenda for Sustainable Development and respect the terms of the National Agreement.[206]

This was followed by the adoption of a constitutional and legal framework (recommendations 118.2, 116.7, 116.8, 116.14 and 116.15) guaranteeing human rights within mining practices and establishing a set of protections aimed at preserving protester health and safety.[207] However, many of these regulations contradict legislative decrees that give a high degree of freedom for

[200] Ibid.
[201] Ibid.
[202] Ibid.
[203] "Corporate Human Rights Due Diligence – Identifying and Leveraging Emerging Practices," OHCHR, accessed May 7, 2022, https://www.ohchr.org/en/special-procedures/wg-business/corporate-human-rights-due-diligence-identifying-and-leveraging-emerging-practices.
[204] Ibid.
[205] "ESG: EU's Proposal on Corporate and Supply Chain Due Diligence," WilmerHale, accessed May 7, 2022, https://www.wilmerhale.com/en/insights/client-alerts/20220225-esg-eus-proposal-on-corporate-and-supply-chain-due-diligence#:~:text=On%2023%20February%202022%2C%20the,with%20human%20rights%20and%20environmental.; Dr Daniel Sharma LL.M., "Human Rights Due Diligence Legislation in Europe – Implications for Supply Chains to India and South Asia: Insights: DLA Piper Global Law Firm," DLA Piper (DLA Piper, March 26, 2021), https://www.dlapiper.com/en/middleeast/insights/publications/2021/03/human-rights-due-diligence-legislation-in-europe/#:~:text=The%20Duty%20of%20Vigilance%20Act,is%20structured%20around%20two%20mechanisms.
[206] "ODS - Sédoc - Documents-DDS-Ny.un.org," accessed May 7, 2022, https://documents-dds-ny.un.org/doc/UNDOC/GEN/G17/085/99/PDF/G1708599.pdf?OpenElement.
[207] UPR of Peru (2nd Cycle – 14th session) "Thematic list of recommendations," OHCHR, 2022.

use of force by both police and military members of private security forces. Following a challenge to their constitutionality in 2020, Legislative Decrees No. 1094 (Military and Police Criminal Code) and No. 1095 (rules on the use of force by the armed forces in the national territory) were assessed by the Peruvian Constitutional Court (PCC).[208] The PCC issued a ruling declaring that offenses committed by military personnel and police officers in their official capacity, in addition to the "exemptions and restrictions on use of force by armed forces in states of emergency, armed conflict or social protests" were constitutional and in line with international standards.[209]

International Investigations and Calls to Attention

In 2015, Amnesty International called attention to mining protests where a 22-year-old man was shot to death by private security forces of the Southern Peru Copper Corporation, continuing the global conversation around human rights in mining operations in the global south.[210] In 2020, Michel Forst, the UN Special Rapporteur of the Human Rights Council (UNSR), hosted meetings with over 475 Peruvian human rights defenders, government and civil society representatives in diverse coastal, Andean and Amazonian regions of the country to investigate the government of Peru's role in perpetuating violence against mining protestors.[211] At the end of the investigation, the United Nations Special Rapporteur stated: "I regret to conclude that a large number of human rights defenders, and especially indigenous people and local communities defending the environment and their human rights are not able to operate in a safe and enabling environment."[212] Key trends cited by the UNSR as evidence of the necessity of stronger social protections included:[213]

1. State institutions' lack of recognition, stigmatization and even criminalization of human rights defenders;
2. Limits on the right to protest, particularly for indigenous communities whose territories are impacted by mining, gas or oil extraction;
3. An inefficient justice system which, together with the police, all too often acts to repress rather than protect defenders.

His recommendations to the Peruvian State as to the actions needed to reduce risks to human rights defenders included:[214]

1. Guaranteeing Indigenous Peoples' human rights;
2. Ensuring the legal recognition and titling of their ancestral lands;

[208] FREEPORT-MCMORAN INC. on its Own Behalf and on Behalf of SOCIEDAD MINERA CERRO VERDE S.A.A., "In the Arbitration under the Convention on the Settlement of Investment Disputes Between States and Nationals of Other States and the United States-Peru Trade Promotion Agreement," ICSID Case No. ARB/20/08. World Bank.
[209] García, I. (2016). Military justice in Latin America: A comparative analysis. In A. Duxbury & M. Groves (Eds.), Military Justice in the Modern Age (pp. 196-217). Cambridge: Cambridge University Press. doi:10.1017/CBO9781107326330.011.
[210] Ibid, Amnesty International.
[211] "End of mission statement by Michel Forst, United Nations Special Rapporteur on the situation of human rights defendersVisit to Peru, 21 January – 3 February 2020," UN Human Rights Office of the High Commissioner, Feb. 3, 2020, https://www.ohchr.org/EN/NewsEvents/Pages/DisplayNews.aspx?NewsID=25507&LangID=E.
[212] Ibid, Michael Forst.
[213] "Peru: UN rights office decries excessive use of force in November protests," UN News, 12 January 2021.
[214] Younger, Tom, "UN expert to Peru: guarantee indigenous peoples' rights, title their lands and end criminalization to protect Human Rights Defenders," Forest Peoples Programme, Feb. 7, 2020, https://www.forestpeoples.org/en/lands-forests-territories-un-human-rights-system/news-article/2020/un-expert-peru-guarantee.

3. Stepping up efforts to remediate the pollution caused by industrial projects;
4. Ending the criminalization of human rights defenders;
5. Tackling the impunity of those responsible for violations against defenders.

RECOMMENDATIONS:
The government of Peru should sign on to the Voluntary Principal Initiative
The Voluntary Principal Initiative is working to develop best practices in mining and security safety. As a part of this initiative, Peru can be at the forefront of mining and security safety. However, this is a baseline and Peru should strive for even more stringent practices.
Encourage, perhaps through tax incentives, companies mining lithium in Peru to join the Voluntary Principal Initiative
If the companies are members of the Voluntary Principal Initiative, the government of Peru and the companies employing its citizens can enhance their collaborative efforts to promote the safety and security of both the local communities, mining staff, and the mines.
Ensure companies have private security, and that private security has human rights training, and a solid human rights background
It is important that mining companies use private security companies that do not overlap with the police or military force for the government of Peru. Private security companies can be mandated to be trained in conflict de-escalation.
Ensure mining companies have human rights policies, and a solid human rights background
It is becoming more common for private companies to have human rights policies that are aligned with the UNGPs. By vetting mining companies to ensure they have these policies, Peru will be ensuring that the mining companies that interact with local communities have internal practices around human rights and have not committed human rights infractions in other communities around the globe. This can also be used to gain community acceptance.
Provide forums for peaceful protest for community members
These can include town community meetings with local, regional, and national representatives as well as community meetings with mining company representatives. Additionally, mining companies can designate a specific protest space, where people can gather to avoid blocking the road and creating conflict with security and local police forces.
Require a clear delineation between public and private police forces and military (there should not be military deployed for mine security)
If separated, the police can serve their purpose of protecting the people and mining security guards can be specifically trained for protecting the mines from the problems such as dealing with protests. This might reduce conflict as each body can remain more neutral and trained in ways that can best serve their constituents without a conflict of interest.
Require through contract or laws that mining companies have and use due diligence procedures
Through due diligence laws or requirements that follow the form of the UNGPs, France, or the EU's structure, Peru can place some of its burden of preventing human rights abuses in the extractive sector, on the corporations that are profiting off the exploitation.

B. Employees Matter: Labor & Human Rights

We first discuss some of Peru's notable obligations under international law. In forming laws and regulations which would specifically govern lithium mining extraction, the Peruvian authorities should be mindful of Peru's international covenants with respect to labor, and the consequences in the event of a violation of these covenants.

State Responsibilities

i. International Labor Standards

The International Labour Organization (ILO) is an agency of the United Nations whose mandate is to set international labor standards, develop policies, and devise programs promoting decent work for all men and women.[215] International labor standards are legal instruments drafted by the constituents of the ILO which come in the form of either Conventions, which are legally binding international treaties that may be ratified by ILO-member states, or Recommendations, which are non-binding guidelines.[216]

The ILO identifies eight "fundamental" conventions covering subjects which under international law are considered to be the fundamental principles and rights of laborers. These subjects are the freedom of association and the effective recognition of the right to collective bargaining; the elimination of all forms of forced or compulsory labor; the effective abolition of child labor; and the elimination of discrimination in respect of employment and occupation.[217] Significantly, Peru has ratified all of the ILO's fundamental conventions.[218]

The ILO Constitution provides a mechanism in the event a member state fails to comply with an ILO Convention. According to the ILO Constitution, a complaint may be filed against a member state for non-compliance by another member state which has ratified the subject Convention, a delegate to the International Labour Conference, or by the ILO Governing Body of its own motion.[219] The ILO Governing Body may then conduct an investigation of the complaint through the creation of a Commission of Inquiry, and which will then issue recommendations concerning the alleged violation. If a member state fails to comply with such recommendations, the ILO Constitution empowers the ILO Governing Body to recommend to the ILO Conference "such action as it may deem wise and expedient to ensure compliance therewith."[220] To date, 14 Commissions of Inquiry have been established, and significantly, Peru has never been investigated by the said body.[221]

[215] "About the ILO," International Labour Organization, accessed March 29, 2022, https://www.ilo.org/global/about-the-ilo/lang--en/index.htm.
[216] "Conventions and Recommendations," International Labour Organization, accessed March 29, 2022, https://www.ilo.org/global/standards/introduction-to-international-labour-standards/conventions-and-recommendations/lang--en/index.htm.
[217] Ibid.
[218] "Ratifications for Peru," International Labour Organization, accessed March 29, 2022, https://www.ilo.org/dyn/normlex/en/f?p=1000:11200:0::NO:11200:P11200_COUNTRY_ID:102805.
[219] "Complaints," International Labour Organization, accessed March 29, 2022, https://www.ilo.org/global/standards/applying-and-promoting-international-labour-standards/complaints/lang--en/index.htm.
[220] Ibid.
[221] Ibid.

In addition to the ILO Conventions and Recommendations, in 1998 the ILO adopted the ILO Declaration of Fundamental Principles and Rights and Work, which declares that member states are obliged to respect and promote principles and rights under four categories, regardless of their ratification of any of the ILO Conventions.[222] These categories are freedom of association and the effective recognition of the right to collective bargaining, the elimination of forced or compulsory labor, the abolition of child labor and the elimination of discrimination in respect of employment and occupation.[223]

ii. Peru-Canada Cooperation

The Agreement on Labour Cooperation Between Canada and the Republic of Peru is relevant since the only potential lithium mining contractor as of date, American Lithium Corp., is a wholly owned subsidiary of a Canadian entity.

Under the agreement, both Canada and Peru commit to ensure that their statutes and regulations embody and provide protection for the following internationally recognized principles and rights:

> (a) freedom of association and the right to collective bargaining (including protection of the right to organize and the right to strike); (b) the elimination of all forms of forced or compulsory labour;
> (c) the effective abolition of child labour (including protections for children and young persons);
> (d) the elimination of discrimination in respect of employment and occupation;
> (e) acceptable conditions of work with respect to minimum wages, hours of work and occupational health and safety; and
> (f) providing migrant workers with the same legal protections as the Party's nationals in respect of working conditions.[224]

The agreement also provides a remedy mechanism in the event of non-compliance with any of the obligations under the said agreement. A party may request in writing consultations with the other party at the ministerial level regarding any obligation under the agreement.[225] If the ministerial consultations do not address the other party's failure to comply with the agreement, the aggrieved party may request that a review panel, composed of individuals with expertise in labor matters or other appropriate disciplines and not be affiliated with either party, be convened, which can then issue a final report which may serve as a basis for the parties' action plan to address the violation.[226] If the action plan agreed upon is still not observed by the violating party, the aggrieved party may thereafter request that the review panel be reconvened to impose an annual monetary assessment on the other party.[227]

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[222] " ILO Declaration on Fundamental Principles and Rights at Work and its Follow-up ," International Labour Conference at its Eighty-sixth Session, Geneva, 18 June 1998 (Annex revised 15 June 2010).
[223] International Labour Organization Declaration on Fundamental Principles and Rights at Work, June 18, 1998.
[224] Agreement on Labour Cooperation Between Canada and Peru, May 29, 2008, art. 1 f.
[225] Ibid. at art. 12.
[226] Ibid. at art. 19.
[227] Ibid. at art. 20.

We now turn our attention to mining companies, which have the obligation of complying with Peruvian labor laws. Discussed below are some notable labor laws in Peru and issues corresponding to these laws. Non-compliance of these laws may give rise to liability on the part of mining companies.

Business Responsibilities

i. Peruvian Labor Standards

The Constitution, statutes, judicial and constitutional precedents, and collective agreements govern employment and labor relations in Peru.[228] Fundamental labor rights such as non-discrimination, working hours, freedom of association, and collective bargaining are guaranteed by the state's constitution, and furthered by statutes such as the Law of Productivity and Labor Competitiveness; the Procedural Labor Law; the Law on Collective Labor Relations; the Law on Days of Work, Hours, and Overtime; and the Regulations on Safety and Health in the Workplace; as well as in sector-specific legislation and ratified international conventions such as those discussed previously.[229]

In the following sections, we discuss three labor-related issues that are relevant in the Peruvian mining sector and which may also be a cause of concern in an eventual lithium mining sector if sufficient steps are not taken by mining operators.

a. Child Labor

Peru is a party to the Minimum Age Convention, which provides that the minimum age for admission to any type of employment which by its nature or the circumstances in which it is carried out is likely to jeopardize the health, safety, or morals of young persons shall not be less than 18 years of age.[230] This commitment is put into effect by the provisions of Peru's Child and Adolescent Code, which mandates that the minimum age for hazardous work is 18 years of age, while the minimum age for other types of work is 14 years of age.[231]

Despite the current legal framework, child labor remains one of the most pressing issues in the mining sector. Authorities have estimated that 1,251,400 children, ages 5 to 17, were engaged in hazardous child labor and that 58.4 percent of these children worked in agriculture, fishing, or mining.[232] Most at risk are children who work in informal and small-scale mining, or those mines whose operators do not have a title to the concession or an agreement with the

[228] Ernesto Cárdenas and Iván Blume Moore, "The Employment Law Review: Peru, The Law Reviews, February 16, 2022, https://thelawreviews.co.uk/title/the-employment-law-review/peru.
[229] "Peru Labor Rights Report," U.S. Department of Labor – Bureau of International Labor Affairs, accessed March 30, 2022, https://www.dol.gov/sites/dolgov/files/ILAB/research_file_attachment/PLRReport.pdf.
[230] International Labour Organization Convention concerning Minimum Age for Admission to Employment C138, June 26, 1973, art. 2.
[231] "Peru," U.S. Department of Labor, accessed March 30, 2022, https://www.dol.gov/sites/dolgov/files/ILAB/child_labor_reports/tda2019/Peru.pdf.
[232] "Child Labor and Forced Labor Reports – Peru," U.S. Department of Labor – Bureau of International Labor Affairs, accessed March 30, 2022, https://www.dol.gov/agencies/ilab/resources/reports/child-labor/peru.

concession owner and other government authorizations,[233] since communities located near illegal mining operations are often isolated and lack a permanent government presence.[234] Children who work in these mines are exposed to safety hazards such as exposure to mercury and other gases, wall and mine collapses, landslides, and explosive accidents.[235]

The enforcement of criminal laws regarding child labor and child exploitation is the responsibility of the Ministry of the Interior. The U.S. Department of Justice has reported that investigations and prosecutions remain inadequate to deter child trafficking, particularly in illegal mining areas and bars, and noted the lack of trained investigators, insufficient funding to carry out the investigations, and low conviction rates as points for concern.[236] Legal expert, Brenda Silva, echoed similar concerns about illegal mining projects, which the mining laws cannot reach. This leads to a void of worker protection and safety, including illegal prostitution and the human trafficking of minors.[237] As of 2020, Peru had a reported 822 labor inspectors as compared with 807 from the previous year, but the U.S. Department of Justice noted that pursuant to ILO's technical advice of having at least one inspector for every 15,000 workers in industrializing economies, Peru would need to employ an estimate of 1,135 inspectors.[238] The report also notes that a number of the current inspectors are junior-level inspectors with limited authority to conduct inspections and who require the supervision of senior inspectors to review their acts for businesses with more than 10 employees.[239]

b. Forced Labor Trafficking

The ILO Forced Labor Convention defines forced or compulsory labor as all work or service which is exacted from any person under the threat of a penalty and for which the person has not offered himself or herself voluntarily.[240] According to the ILO, the above definition consists of three elements: 1) work or service, which refers to all types of work occurring in any activity, industry or sector including in the informal economy; 2) threat of any penalty, which refers to a wide range of penalties used to compel someone to work; and 3) involuntariness, which refers to the lack of free and informed consent of a worker to take a job and his or her freedom to leave at any time.[241]

In 2016, the non-profit civil society organization Verité, issued a report regarding the forced labor conditions in the Puno region, which it noted is the second largest producer of illegally mined gold.[242] Based on interviews conducted in the region with workers, labor intermediaries, cooperative members, worker transporters, gold buyers, and other stakeholders, Verité discovered that an employment system called that "cachoreo" was being implemented in La Rinconada, under which miners had to work for no pay for a certain amount of time before

[233] "Risk Analysis of Indicators of Forced Labor and Human Trafficking in Illegal Gold Mining in Peru," Verité, accessed March 30, 2022, https://www.verite.org/wp-content/uploads/2016/11/Indicators-of-Forced-Labor-in-Gold-Mining-in-Peru_0.pdf.
[234] U.S. Department of Labor – Bureau of International Labor Affairs, "Child Labor and Forced Labor Reports – Peru."
[235] Ibid.
[236] Ibid.
[237] Interview with Brenda Silva on April 19, 2022.
[238] U.S. Department of Labor – Bureau of International Labor Affairs, "Child Labor and Forced Labor Reports – Peru."
[239] Id,
[240] International Labour Organization Convention concerning Forced Labour, June 28, 1930, art. 2.
[241] "What is forced labour, modern slavery, and human trafficking," International Labour Organization, accessed March 30, 2022, https://www.ilo.org/global/topics/forced-labour/definition/lang--en/index.htm.
[242] Verité, "Risk Analysis of Indicators of Forced Labor and Human Trafficking in Illegal Gold Mining in Peru."

they could extract gold that they could receive personally and which would serve as their compensation for their services.[243] The organization also noted that the long periods during which the workers received little or no pay would force the miners to enter into loan agreements with their recruiters or cooperative members, create a cycle of debt and result to induced indebtedness.[244] Additionally, the organization noted that there have been reports of friends and family of miners who had gone to La Riconada and disappeared, creating a menace of penalty of physical violence for failure to repay the loans.[245]

c. Working Conditions

Under the Mining Regulation on Occupational Health and Safety, holders of mining concessions are required to formulate an Annual Occupational Health and Safety Program as well as an Annual Training Program, provide protective equipment to all workers, and keep updated records of incidents.[246] Moreover, the entities responsible for the supervision of health and safety in mining activities are the General Mining Bureau of the MINEM, SUNAFIL, and Supervisory Agency for Energy and Mining Investment (OSINERGMIN). Concerns about mine safety were also mentioned by Brenda Silva, legal specialist and attorney for MINEM, who expressed that the safety and security of mining operations can be improved, especially in regard to dangerous mining practices.[247]

In a risk assessment study of occupational groups working pit mining conducted by researchers from Dumlupunar University in Turkey, researchers found that the most likely hazard in the open pit mining method was related to the slope of the mine.[248] The movement of slopes brought about by heavy machinery, workers, drillers operating on slopes, blasts, cracks, loose rocks, and bad atmospheric conditions have caused landslides which pose a major safety risk.[249] To mitigate the risk, researchers have suggested that the optimum slope angle, slope height, and slope width for the safety of machinery and personnel should be determined based on the site's geological, tectonic and physical properties.[250] Other hazards that pose major risks in open pit mining are caused by noise and vibration resulting from the operations as well as logistics-related aspects such as road crash-tipping-burning, dropping-burning of machinery, and crash-tipping-burning of machinery in traffic.

These same risks were found by Verité in the La Rinconada mine in the Puno Region, and added that workers in the mine also face a set of unique risks associated with working and living at extremely high altitudes, including altitude sickness, pulmonary and cerebral edema, and exposure to extreme cold, as they worked in icy tunnels dug under glaciers high up in the Andes.[251] Verité also noted that most workers in the mine lived in small sheet metal boxes

[243] Id.
[244] Id.
[245] Id.
[246] "Mining in Peru: overview," Alberton Delgado and David Baracco – Thomson Reuters Practical Law, accessed May 9, 2022, https://uk.practicallaw.thomsonreuters.com/w-008-1009?transitionType=Default&contextData=(sc.Default)&firstPage=true.
[247] Interview with Brenda Silva on April 19, 2022.
[248] Yasar Kasap, Ela Subasi, "Risk assessment of occupational groups working in open pit mining: Analytic Hierarchy Process," Journal of Sustainable Mining Vol. 16, Issue 2 (2017): 43 https://doi.org/10.1016/j.jsm.2017.07.001.
[249] Ibid.
[250] Ibid.
[251] Verité, "Risk Analysis of Indicators of Forced Labor and Human Trafficking in Illegal Gold Mining in Peru."

without any plumbing facilities or kitchens without any efficient sewage and trash collection system, resulting to a high rate of pulmonary illnesses and other diseases.[252]

Mining operators should also be mindful of the severe psychosocial risks associated with work in the mines. One study has found that psychological distress is associated with the psychosocial work environment in Andean underground miners which reduces the quality of life and increases mortality and recommends that occupational health programs for miners should not only include prevention of occupational accidents and diseases but also should target psychosocial aspects of the work environment.[253]

In addition, the presence of uranium in lithium mines presents a unique set of challenges in connection with workers' safety, primarily due to the potential for exposure of miners to elevated concentration of radionuclides,[254] which are radioactive forms of elements which emit radiation.[255] The exposure to radiation from these radionuclides most often occur from inhaling or ingesting radioactive materials or through external radiation exposure, with lung cancer associated with gamma radiation exposure on-site as the highest potential radiation-related health risk.[256] The OECD has identified some of the leading practices in uranium mining in its report "Managing Environmental and Health Impacts of Uranium Mining" published in 2004.[257] These practices include the creation of regulatory agencies with inspection and enforcement powers relating to the handling of uranium, the implementation of training programs by mining operators, and assigning to workers the responsibility for reporting safety concerns internally and to regulatory authorities.[258]

Given the apparent nascent quality of lithium and uranium exploration in Peru, before proceeding with a full-on exploration of uranium, it is necessary for Peru to first conduct studies on the amount of actual and potential uranium that will be handled by miners, then after these are identified, craft occupational health and safety regulations pursuant to international best practices as identified by international organizations such as the OECD and the World Nuclear Association. Peru should work closely with these organizations in preparing regulations to ensure that modern health and safety standards are upheld.

To end this section, we turn to corporate responsibilities of mining companies. Corporate responsibilities refer to company policies that aim maximize the positive impacts of a company's operations on society, the environment, and the economy.[259] Unlike business responsibilities,

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[252] Ibid.

[253] Maria Luisa Salas MPH, Steve Quezada MD, MSc, Armando Basagoitia MD, MSc, Tamara Fernandez Lic, Ronald HerreraMSc, Manuel Parra MD, Daniel Moraga Muñoz PhD, Matthias Weigl PhD, Katja Radon MSc, PhD, "Working Conditions, Workplace Violence, and Psychological Distress in Andean Miners: A Cross-sectional Study Across Three Countries, Annals of Global Health Vol. 81, Issue No. 4 (July-August 2015): 466 https://doi.org/10.1016/j.aogh.2015.06.002 .

[254]Committee on Uranium Mining in Virginia, Committee on Earth Resources, and National Research Council, Uranium Mining in Virginia: Scientific, Technical, Environmental, Human Health and Safety, and Regulatory Aspects of Uranium Mining and Processing in Virginia (Washington D.C.: The National Academies Press: 2012), 123, at https://www.ncbi.nlm.nih.gov/books/NBK201047/.

[255] "Radionuclides," United States Environmental Protection Agency, accessed April 27, 2022, https://www.epa.gov/radiation/radionuclides.

[256] Committee on Uranium Mining in Virginia, Committee on Earth Resources, and National Research Council, Uranium Mining in Virginia: Scientific, Technical, Environmental, Human Health and Safety, and Regulatory Aspects of Uranium Mining and Processing in Virginia, 20.

[257] OECD, "Managing Environmental and Health Impacts of Uranium Mining," (2014), https://doi.org/10.1787/9789264216044-en.

[258] "Perceptions and Realities in Modern Uranium Mining," OECD, 2014, https://www.oecd-nea.org/jcms/pl_14768/perceptions-and-realities-in-modern-uranium-mining-extended-summary?details=true.

[259]"Corporate responsibility: an introduction," Copyright Chartered Institute of Personnel and Development, accessed May 12, 2022, https://www.cipd.co.uk/knowledge/strategy/corporate-responsibility/factsheet#7898.

non-compliance of corporate responsibilities may not necessarily result to liability on the part of mining companies.

Corporate Responsibilities

i. Promotion of Peruvian Labor

Experiences from Tía María, Las Bambas, and other notable Peruvian mining projects have shown that one of the main reasons for a community's distrust in mining operators is the inability of the latter to hire enough local workers for their respective projects. Employment is often perceived by communities as a greater immediate benefit that a project can bring to the area.[260] Mining operators must be mindful of promoting local employment in a balanced and inclusive way that considers vulnerable groups like women and illiterate persons, and in a manner which effectively manages the abandonment of traditional activities and excessive immigration to the area.[261]

Stakeholders must also be mindful of the specific nature of hard rock lithium mining, particularly, that it is likely to involve the handling of uranium deposits. According to Martin Dietrich Brauch of the Columbia University Center for Sustainable Investing (CCSI), because of the uranium factor, the Falchani Project is likely going to require employees to be more skilled and trained as opposed to other mining project, which may cause problems for local employment requirements.[262] To address this issue, the government, mining operators, and other stakeholders must work to establish and maintain programs that would effectively train workers on how to mine properly given the presence of uranium in lithium mines.

ii. Third-Party Labor-Related Certifications

One of the goals of Mining Vision 2030 is to creating a modern and innovative legal framework that sets high environmental and social standards. This can be done by undertaking an international comparative study on environmental and social procedures to assess the continuous improvement of the laws adjusted to the country's reality, and by increasing the efficiency of the processes, optimizing the timelines of paperwork and procedures in the three levels of government, maintaining high environmental and social standards. These goals can be implemented based on labor standards and certifications in other countries.

In the gold mining industry, various organizations issue certifications stating that a stakeholder in the mining supply chain has complied with a series of standards that promote responsible mining. For instance, the Alliance for Responsible Mining issues the Fairmined Certification, which pledges the compliance of an artisanal or small-scale mining organization with the Fairmined Standard that includes requirements for such organizations to perform a legal mining operation, eradicate child labor, operate with low environmental impact, and

[260] "Corporate Social Responsibility in the Mining Sector in Perú," Oxfam International, accessed on March 30, 2022, https://oxfamilibrary.openrepository.com/bitstream/handle/10546/620774/er-csr-mining-peru-220408-en.pdf?sequence=1.
[261] Ibid.
[262] Interview with Martin Dietrich Brauch, March 5, 2022.

ensure a health and safe workplace for miners, among others.[263] Santa Filomena, a hard-rock mining community in Peru, was able to obtain the Fairmined Certification after eliminating child labor, establishing strict safety requirements, upgrading miners' housing, and building a cyanide processing plant to replace open-air mercury amalgamation.[264] Another example is the certification issued by the Responsible Jewellery Council, a standard setting organization for the jewelry and watch industry that seeks to enhance trust in the global jewelry system by implementing a Code of Practices which deals with business ethics and responsible supply chains.[265] Members of the council include Peruvian mining operators Minera Chalhuane S.A.C., Minera Sotrami S.A., and Minera Yanaguiha S.A.C. and renowned jewelrers such as Cartier and Tiffany & Co.[266]

Meanwhile, in the lithium mining industry, mining operators such as Albermarle Corporation, the operator of the Salar Plant in Chile's Salar de Atacama, and the Sociedad Química y Minera de Chile SA., which operates the Salar del Carmen plant in Chile, have sought certifications from the Initiative for Responsible Mining Assurance (IRMA). IRMA implements its Standard for Responsible Mining, which defines good practices for what responsible mining should look like at the industrial-scale, and includes requirements for fair labor and terms of work, occupational health and safety, and community health and safety.[267] On a related note, the 2021 Columbia Capstone recommended that IRMA's Standard for Responsible Mining be enacted in all mining-related legislation.

The attainment of such certifications allows mining stakeholders to be subject to standards which are likely more stringent than those imposed under applicable laws, and consequently help promote a positive image of the entity in the investor community; however, these companies must recognize that local communities care more about maintaining healthy relationships with investors than these companies simply securing these certifications . Thus, while it is good that stakeholders are actively seeking these certifications, stakeholders must equally be as active in fostering and nurturing healthy relationships with affected communities.

RECOMMENDATIONS:
Encourage mining operators to establish community ties even before the project is implemented
In terms of community engagement, MINEM can encourage prospective mining operators to establish ties with the local communities early and review the best practices from other Peruvian mining projects that have achieved general community acceptance.
Increase funding and training for local labor inspectors and create measures to ensure their safety when visiting mining projects

[263] "The Fairmined Standard for Gold," Fairmined.org, accessed Mar. 30, 2022, https://fairmined.org/the-fairmined-standard/.
[264] Barbara Fraser, "Tarnished gold: why Peru's forced labor mining matters to the US," The Guardian, October 16, 2013, https://www.theguardian.com/sustainable-business/peru-gold-mining-forced-labor.
[265] "RJC at a Glance," Responsible Jewellery Council, accessed on Mar. 30, 2022, https://www.responsiblejewellery.com/about/history/.
[266] "RJC Member Register," Responsible Jewellery Council, accessed on March 30, 2022, https://www.responsiblejewellery.com/membership/find-an-rjc-member/?bycountry=Peru&rjccategories=&rjccertification=&searchbox=&pagenum=1.
[267] IRMA Standard, Initiative for Responsible Mining Assurance, accessed on March 30, 2022, https://responsiblemining.net/what-we-do/standard/.

As of 2020, Peru had a reported 822 labor inspectors as compared with 807 from the previous year, but the US Department of Justice noted that pursuant to ILO's technical advice of having at least one inspector for every 15,000 workers in industrializing economies, Peru would need to employ an estimate of 1,135 inspectors.
Work with OECD and other organizations in crafting occupational health and safety regulations for uranium mining
Before proceeding with a full-on exploration of uranium, it will be necessary for Peru to first conduct studies on the amount of actual and potential uranium that will be handled by miners, then after these are identified, craft occupational health and safety regulations pursuant to international best practices as identified by international organizations such as the OECD and the World Nuclear Association.
Encourage mining operators to obtain third-party certifications
The attainment of such certifications allows mining stakeholders to be subjected to standards which are likely more stringent than those imposed under applicable laws, and consequently help promote a positive image of the entity in the investor community.
Craft occupational health and safety regulations in consultation with the OECD and other international organizations
As hard rock lithium mining has been done in other countries across the globe, there are likely best practices that have been tried and reported. International bodies like OECD are likely to have example regulations on occupational health and safety standards.
Increase funding and training for local labor inspectors and create measures to ensure their safety when visiting mining projects
The ability of labor inspectors to adequately ensure that no human rights violations are occurring is heavily dependent on financial and educational support from the government. Training programs can enhance the ability of inspectors to site labor violations, and enhanced funding will ensure inspectors have the resources and time to thoroughly inspect the mines.
Encourage operators to obtain third-party certifications
In other types of mining, mining operators get certifications from bodies that certify an operator's compliance with heightened standards relating to child labor, environment, and other concerns. These are standards that are above what local laws prescribe. The need for such certifications is heightened in lithium mining because of the potential safety risks of uranium.

C. Balancing the Playing Field: Gender and Human Rights

Gender and human rights will be an important aspect of lithium mining, just as it is in any other mining and human rights development. Peru has been in the eye of relevant Human Rights NGOs in the past year for gender and rights violations such as forced sterilizations, censorship of gender rights focused journalism, femicides, and lack of access to abortion.[268] Within the mining

[268] "Peru - Human Rights Watch 2021 Report," Human Rights Watch, accessed May 9, 2022, https://www.hrw.org/world-report/2022/country-chapters/peru.

industry, there has been significant attention and advocacy around gender rights.[269] According to the Ministry of Energy and Mines, only 5.4% of the mining industry in Peru is made up of women.[270] Out of this 5.4%, "49% of women are dedicated to administrative positions; 30% are in general operations; 17% work as plant personnel and only 4% hold management positions."[271] At the current rate of change in Peru, this gap is expected to take up to 217 years to remedy.[272] This disparity has likely led to a large income gap for women in the mining industry. Peru ranks 128th out of 144 countries in The World Economic Forum's Global Gender Gap Report for 2017. Additionally, and of grave concern, is the heightened presence of human trafficking around the mines in Peru.[273]

While there is not currently direct research on the presence of human rights violations in lithium mines specifically, there are concerns in the academic community that lithium mines and the lithium mining industry will present the same risks and concerns for gender and human rights. Dr Maryse Helbert, of the International Institute of Social Studies is currently conducting research on "Lithium extraction for inclusive development: Gender Analysis in Chile & Bolivia".[274] "[H]er research will explore the gender dynamics of neo-extractivism. It will also examine how different development approaches can either improve or worsen existing gendered inequalities."[275]

While this research is still new, we believe it is paramount that the Peruvian government considers gender-based human rights concerns while developing laws and policies around lithium mining to promote gender equality in its national development. In Mining Vision 2030, the government agreed to support research, development, and innovation throughout the mining value chain including from local communities. One way to do this would be to focus on the impact of mining on gender and family dynamics. According to an Expert Opinion Article by Lita Calenzani, President, Women in Mining Peru (WiM Peru),

> [A] number of international studies are proving that gender diversity directly contributes to the companies' profitability. The aforementioned World Economic Forum's report suggests that gender economic parity could add US$250 billion to the GDP of the U.K., US$1.75 trillion to the GDP of the U.S.A., and US$2.5 trillion to the GDP of China. Thus, investing in equality is profitable, and the world's GDP could take advantage of that, experiencing 26% growth by 2025.[276]

Both citizens and private industry within Peru have shown interest in furthering gender and human rights in the Mining Industry, showing that gender-focused legislation might be largely welcomed. In September 2016, Women in Mining Peru (WiM Peru) was created as a civil society organization intended "to highlight the role of women in Peruvian mining, promote best corporate practices, contribute to women's comprehensive training, facilitate the exchange of

[269] "The Role of Women in Peru's Mining Industry," Global Business Reports, accessed November 6, 2018, https://www.gbreports.com/article/the-role-of-women-in-perus-mining-industry.
[270] Ibid.
[271] Ibid.
[272] Ibid.
[273] U.S. Department of State, 2020 Trafficking in Persons Report: Peru, https://www.state.gov/reports/2020-trafficking-in-persons-report/peru/
[274] International Institute of Social Sciences, https://www.iss.nl/en/research/research-projects/lithium-extraction-inclusive-development
[275] Ibid.
[276] Global Business Reports, "The Role of Women in Peru's Mining Industry."

experiences and inspire other women to join the sector."[277] The organization now has more than 300 local members.[278] Efforts are also being made by some local mining companies to close the gender gap.[279] Local companies have instituted training and skill enhancement programs for women, collaborated with local universities and technical institutes, and provide special benefits to women working in the industry.[280]

Despite the efforts, it is important to acknowledge that there are "[p]ervading beliefs in the Andean culture still regard women as a bad omen within the mining activity, challenging their presence in artisanal and small scale mining."[281] This inherently causes tension with Peru's equal renumeration Law No. 30709, which prohibits wage discrimination between men and women[282], and Peru's commitment to the CEDAW[283]. To address potential gender discrimination issues that may arise in the development of the lithium mining industry, we suggest the following:

RECOMMENDATIONS:
Adopt suggestions from the US Department of State from their 2020 Trafficking in Persons Report: Peru
Specifically: 1) the government can require that lithium mining companies dedicate resources to planning law enforcement operations; 2) MINEM can ensure officials across sectors apply a definition of trafficking consistent with international standards; and 3) MINEM should enforce laws against crimes that facilitate trafficking, such as fraudulent job recruitment, illegal mining and logging, and counterfeit operations.
Adopt suggestions from The World Bank report: "Gender-Sensitive Approaches for the Extractive Industry in Peru: Improving the Impact of Women in Poverty and Their Families"
Specifically, MINEM should merge the efforts of the companies already practicing gender-equality enhancing strategies with government initiatives. Additionally, MINEM's lithium regulations can promote an enhanced reporting relationship between the companies and MINEM so that the government can assist in developing the training necessary to promote gender equality.
Regulations for new lithium mines should require that the mining companies conduct research according to the suggested methodology by Oxfam Australia report titled, "Women, Communities, and Mining: The Gender Impacts of Mining and the Role of the Gender Impacts Assessment."
Specifically, regulations should require that mining companies collect data of the: 1) baseline poverty levels of local people based on race, ethnicity, gender, and socioeconomic status; 2) context of how the local communities might be affected by the mining project (e.g. gender

[277] Ibid.
[278] Ibid.
[279] "Peru miners strive to close the gender gap," bnamericas, November 19, 2021, https://www.bnamericas.com/en/news/peru-miners-strive-to-close-the-gender-gap.
[280] Ibid.
[281] "Female Miners in Peru Gain Landmark Recognition of Key Role in Gold Value Chain," Solidaridad, August 28, 2018, https://www.solidaridadnetwork.org/news/female-miners-in-peru-gain-landmark-recognition-of-key-role-in-gold-value-chain/.
[282] "Peru," Equal Pay International Coalition, accessed May 9, 2022, https://www.equalpayinternationalcoalition.org/members/peru/.
[283] UN Human Rights Office of the High Commissioner, "Convention on the Elimination of All Forms of Discrimination Against Women New York", December 18, 1979, https://www.ohchr.org/en/instruments-mechanisms/instruments/convention-elimination-all-forms-discrimination-against-women.

roles in the family, industry, control of resources, etc.); 3) issues introduced by the mining project; 4) local women' needs. The mining company can then make recommendations and develop a gender strategy and regularly audit and review this strategy based on new data.
CDAs should include gender employment and training requirements
CDAs should guarantee gender employment requirements such as required percentages of female hires, training programs for women to do various technical jobs, and programs that support new mothers.

III. COMMUNITY ENGAGEMENT: INVOLVED, CONSISTENT, & ENFORCEABLE

There are two forms of community engagement for mining projects in Peru: (a) the Law of the Right to Prior Consultation for Indigenous and Native Peoples (Consulta Previa) and (b) Regulation on Citizen Participation Process in the Mining Sector (Participacion Ciudadana). Additionally, the central goal of Mining Vision 2030 is that "By 2030, mining in Peru will be socially inclusive and environmentally and regionally integrated within a framework of good governance and sustainable development. It will be consolidated as a competitive and innovative activity that is valued by society as a whole."

To reach this goal, Mining Vision 2030 prioritizes strengthening the ability of regional and local governments to enforce social and legal agreements by allocating resources for the development of the capacities of regional and local governments and establishing incentives for the fulfillment of goals and transparency of information of the national, regional and local authorities. Additionally, in an interview with the Vice Minister of Mines for MINEM, the Vice Minister expressed that MINEM's top priorities is to improve the ability for communities to have dialogue with companies. The Vice Minister states that MINEMs wants to make sure that companies and communities can dialogue together and work together.[284]

A good example of community engagement is the communication between the Corani community and the Canadian mining company operating in the Corani district in Peru. The company and the community have worked for a long time to establish a community benefit to reach consensus on an agreement, which is not very common. In fact, the community was not always in favor of this investment, but the Canadian firm worked many years to enhance this community engagement by going above and beyond state requirements.[285]

This is especially important in the Falcusani, Corani, and Macusani regions. According to Miguel Antezano from MINEM, there is a strong need for community engagement due to social resistance to projects based on the communities' ancestral traditions in the area where the mines are. There are specific licenses that are required to work in these areas. This is where the law of consulta previa becomes extremely important.[286] Luis Miguel Incháustegui, Mining Expert and Consultant and author of Mining Vision 2030 echoes these concerns. Incháustegui states that, if mining projects are going to be successful, the companies and governments will need to

[284] Interview with the Vice Minister of Mines for MINEM. April 19, 2022.
[285] Interview with Miguel Antezano, Ministry of Energy and Mines, Government of Peru. March 1, 2022.
[286] Ibid.

secure social licenses "from day one."[287] This social license should impose duties, obligations, and rights, and will likely require compromise on all sides.[288] Community engagement will also help quell any community fears. It cannot be denied that there is an imbalanced power dynamic between the community and the mining company, in which the government does not broker or become involved with.[289] Incháustegui cited various news articles referencing community fears about mining, which does not help the relationships, but instead makes communities more worried. The people are unsure of what will happen, which is something that can be fixed by the government. The government has announced that companies will begin mining lithium, which has frightened the communities, who do not yet know what this will mean for them. This is something that can be fixed through enhanced community engagement.[290]

A. Consulta Previa

The Law on the Right of Indigenous and Native Peoples to Prior Consultation or Law 29785 institutionalizes consulta previa. It is the main Peruvian law that guarantees the collective right of indigenous peoples to be consulted by the State prior to the enactment of legislative or administrative measures that may directly affect their collective rights.[291] It is intended to ensure the collective rights of Indigenous peoples and establish mechanisms for intercultural dialogues between the State and Indigenous peoples to reach agreements regarding the approval of measures likely to affect the rights of Indigenous peoples.

Under the Law on the Right of Indigenous and Native Peoples to Prior Consultation and its regulations (Supreme Decree 001-2012-MC), for a mining project to start operations in an area that has the presence of indigenous people (a subject that should be consulted with, and determined by, the Ministry of Culture), the state must conduct prior consultation to provide sufficient information and gather the views of the affected indigenous communities whose collective rights may be impacted by the mining project.[292] At the end of the required consultation process, the state makes the decision regarding the planned legislative or administrative measure, considering the views, suggestions, and recommendations of the indigenous communities obtained during the consultation process.[293] This can be formalized in an agreement between the state and the community which is legally binding for both parties.[294] The conclusion of such an agreement between the state and the community is, however, not a legally required result. If the parties fail to reach an agreement, the state decides and proposes the measure. The state can decide to not reach an agreement, and instead, reject the concerns of the indigenous community. The state only has the obligation to take measures necessary to accommodate the interests of the community to the greatest extent possible; it is not under any obligation to obtain the community's approval.[295] The Law on the Right of Indigenous and Native

[287] Interview with Luis Miguel Incháustegui, Mining Expert and Consultant and author of Mining Vision 2030. April 19, 2022.
[288] Ibid.
[289] Interview with MINEM environmental team, April 2022.
[290] Ibid.
[291] See Art. 1, Consulta Previa Law.
[292] Alberto Delgado, et. al., "Mining in Peru: Overview", Thomson Reuters Practical Law, September 1, 2020, https://1.next.westlaw.com/Document/Ie3ca5b2637ef11e798dc8b09b4f043e0/View/FullText.html?contextData=(sc.Default)&transitionType=Default&isplcus=true&firstPage=true&bhcp=1.
[293] Article 15(1), Consulta Previa Law.
[294] Article 15(2), Consulta Previa Law.
[295] Article 15(2) Consulta Previa Law. See also Article 5(d) and 5(e), Reglamento de la Ley No. 29785.

Peoples to Prior Consultation or its regulations do not provide a veto right to the indigenous peoples, but they may challenge the result of the consultation.[296] Notably, the General Mining Law also does not require prior consultation before concession rights are granted.

B. Citizen Participation Process in the Mining Sector (Participacion Ciudadana)

Participacion Ciudadana is based on Article VI of the Environment and Natural Resources Code of 1990, which provides that "[a]ll persons have the right to participate in the definition of the policies and in the adoption of measures of national, regional, or local measures related to the environment and natural resources. In the same manner, [all persons have the right] to be informed of the measures or activities that may directly or indirectly affect the health of persons or the integrity of the environment and natural resources. Everyone is obliged to provide to the authorities the information that the latter may require for exercising their powers to control and monitor the environment."

To incorporate community participation into the mining process, the MINEM enacted Ministerial Resolution 304-2008-MEM-DM, which requires mining companies to provide all information in the Environmental Impact Assessment to the community. It outlines the participatory requirements at each stage of the process: prior to the filing of the EIA, the MINEM must inform citizens of their rights and obligations environmental legislation, technologies to be used during the project; during the project development stage, the mining company must inform the publ ic of its progress; and after the EIA is presented to the MINEM, the mining company must inform the authorities and the public of the contents of the study.[297]

The current legal and regulatory framework only requires consultation, which is insufficient to achieve meaningful community participation. The following significant deficiencies are obvious: 1) the consultation process is largely conducted and dictated by the state; 2) consultation does not require consent from the community; 3) the law only requires consultation with indigenous peoples and not affected communities in general; 4) there is a lack of clarity on what constitutes an affected community that requires consultation; and 5) the responsibilities of different government agencies overlap and conflict.[298] To be sure, there is a lack of effective community participation in the mining approval process. As discussed above, this has customarily contributed to community conflict and instability of the mining project. Thus, there is a need to improve existing community consultation process, require community consent, and foster meaningful community participation.

Historically, government regulatory efforts and voluntary company practices have been employed to address concerns of local communities over extractive projects. However, these approaches have often been insufficient in resolving complaints and increasing community participation.[299] In this context, there is a greater interest in achieving sustained development in

[296] "Frequent questions" Consulta Previa, Peru Ministerio de Cultura, accessed March 25, 2022, https://consultaprevia.cultura.gob.pe/preguntas-frecuentes.
[297] Li, Fabiana. "Documenting Accountability: Environmental Impact Assessment in a Peruvian Mining Project." Political and Legal Anthropology Review 32, no. 2 (2009): 218–36.
[298] 2017 Columbia Capstone, p. 27.
[299] Troy Sternberg, Ariell Ahearn, Fiona McConnell, From conflict to a Community Development Agreement: a South Gobi solution, Community Development Journal, Volume 55, Issue 3, July 2020, Pages 533–538, https://doi.org/10.1093/cdj/bsz018.

communities affected by large extractive projects. Increasingly, the trend is towards greater government intervention in social investment, and standardization through a statutory approach to national investment by transforming voluntary practices to regulations. One of the tools available to promote immediate and sustainable development in extractive industries is a Community Development Agreement (CDA).

A CDA is "a legally binding contract between the holder of an authorization granting the rights to extract minerals, and a community (or communities) that will be affected by the exercise of those rights, that addresses matters concerning community development."[300] It is becoming commonplace as an effective method to improve community relations and ensure the development and benefit of local communities from large-scale investment projects such as mining. It is a tool to improve relationships between companies, communities, governments, civil society, and other stakeholders, and to promote sustainable and mutually rewarding benefits from mining projects.[301] It plays an important role in managing community expectations and providing means to achieve sustainable development for mine-dependent communities long after closure of the mines. It is endorsed by international agencies (World Bank and United Nations), mining consortia, (International Council on Mining and Metals), and practitioners.[302] CDAs have been utilized in extractive sectors in Australia, Canada, Laos, Papua New Guinea, Ghana, and Greenland.[303] CDAs can be entered voluntarily between investors and local communities or can be required by domestic legislation or regulation. There is a growing trend towards increased government intervention in social investment, and transformation of voluntary CDA practices adopted within the industry into regulations.[304] Over 40 jurisdictions now require CDAs for large-mining operations and more than 50 impose a variant of community development effort.[305]

The 2015, 2017, and 2020 Columbia Capstones have recommended consent agreements and community partnership agreements, which are to be tailored to each community situation, to achieve a binding and enforceable social license between the local community and investors.

However, reliance on voluntary efforts of mining companies to assist in community development and enter into community partnership agreements is uncertain—not all firms prioritize community assistance or are competent to know how to offer such assistance or offer insufficient community development. Thus, an increasing number of governments are now mandating the use of CDAs or other community development tools in their mining legislation rather than relying simply on voluntary approaches.[306] This reduces the risk that sustainable community development will not take place.

[300] James M. Otto, "How do we legislate for improved community development?" at 27 (Working Paper 2017/102) April 2017.
[301] World Bank, Mining Community Development Agreement Source Books, 5 (March 2012).
[302] Troy Sternberg, Ariell Ahearn, Fiona McConnell, "From conflict to a Community Development Agreement: A South Gobi solution", Community Development Journal, no. 55 (July 2020) 533–538, https://doi.org/10.1093/cdj/bsz018.
[303] Jennifer Loutit, Jacqueline Mandelbaum, Sam Szoke-Burke, "Emerging practices in community development agreements" Journal of Sustainable Development Law and Policy, no. 7 (July 2016) 65-96, https://doi.org/10.4314/jsdlp.v7i1.4.
[304] Ibid.
[305] James Otto, "How FDI in the mining sector can assist communities to achieve sustainable development" Columbia FDI Perspectives, no. 325, (February 2022), https://ccsi.columbia.edu/sites/default/files/content/docs/fdi%20perspectives/No%20325%20-%20Otto%20-%20FINAL.pdf.
[306] James M. Otto, "How do we legislate for improved community development?" at 3 (Working Paper 2017/102) April 2017.

To complement and operationalize the community partnership agreement proposed by past Columbia Capstones, legally require these agreements, and standardize its existence and content, there is a need for national legislation or a regulatory requirement that specifically requires mining companies to enter formal community partnership agreements/CDAs with affected local communities (e.g., Papua New Guinea and Mongolia).[307] Government regulation requiring CDAs will provide a clear roadmap as regards the types of projects requiring CDAs, parties to agreements, mandatory agreement provisions, periodic CDA review and revision, negotiation capacity of communities, agreement approval by communities and the state, alignment with national and regional government development plans, handling of new community members, annual minimum expenditure for community projects, reporting requirements, penalties, enforcement and grievance machinery.

RECOMMENDATIONS:
We recommend the draft community development agreement regulation to be implemented by the MINEM. (See Appendix C).
This will enforce and streamline community partnership agreement initiatives in the various mining projects to be implemented in Peru. The draft regulation is patterned after the World Bank Group Community Development Agreement Model Regulations & Example Guidelines Report and have been adapted to the development and regulatory requirements of the Peruvian government.

[307] World Bank, "Mining Community Development Agreements - World Bank", last modified March 2012, https://documents.worldbank.org/curated/en/522211468329633554/pdf/712990WP0minin00Box370065B00PUBLIC0.pdf.

PART 3: LITHIUM AS AN ECONOMIC MULTIPLIER

CASE STUDY:

LITHIUM EXPLOITATION AND ECONOMIC STRUGGLE IN BOLIVIA

The case study that follows presents key challenges faced by a nation which, so far, has not been able to maximize the economic potential of its rich lithium reserves. It will be essential for Peru to continue to observe and learn from the experiences of lithium-supplying nations, especially those in the region, to ensure that the current issues of these nations do not evolve to become Peru's future problems.

The Salar de Uyuni in Bolivia is the largest salt flat in the world, containing approximately half of the world's total lithium deposits.[308] This has led to high expectations within the country of economic freedom and prosperity, both as a nation and for individuals. In 2008, when it became clear that lithium would be a sought-after commodity for the electric car industry, then-vice president Alvaro Garcia Linera proclaimed that lithium production would "relieve the 40 percent of citizens who are living in extreme poverty by 'training them in scientific and technological fields so that they become part of the intelligentsia in the global economy.'"[309] The initial plan (since the 1990s) was to have complete state-control over lithium extraction at Salar de Uyuni.[310] However, lithium mining is an extremely expensive and technical endeavor, delaying the state-owned extraction goals until 2018.[311]

[308] "Lithium," United States Geological Survey, accessed Feb. 18, 2022, https://pubs.usgs.gov/periodicals/mcs2021/mcs2021-lithium.pdf.
[309] Samar Ahmad, "The Lithium Triangle: Where Chile, Argentina, and Bolivia Meet", Harvard International Review (Jan. 15, 2020) https://hir.harvard.edu/lithium-triangle/.
[310] Ibid.
[311] Ibid.

In 2018 the Bolivian government attempted to bring in foreign investment, which led to both successes and failures. The government hired two Chinese firms, Maison Engineering and CMEC, to build lithium carbonate plants that could make 1,360 tonnes of the mineral on an annual basis. While this development did not cause national upset, the plant's progress is very delayed.[312] As of February 2021, the plant is still under construction and was only 59% complete at the time, even though it was supposed to be complete in the first quarter of 2020.[313] This investment seemed to be received well by the Bolivian people. Also in 2018, the Bolivian government attempted a joint venture with a German firm, ACI systems, to build a lithium hydroxide plant (a planned investment of USD1.3 billion).[314] In this deal, Bolivia would have owned 51% of the plant and ACI would have significant say in European sales of the mineral. However, little local development came from the joint venture. Few local jobs were created, and almost none of those were technically trained, skilled, or well-paying positions.[315] Strong local backlash led the Bolivian government to rescind their legislation permitting the joint venture with ACI in November 2019.[316] According to ACI, ongoing delays and disputes about royalties were another cause of the legislative rescission.[317]

Due to slowness in extraction, Bolivia actually produces much less lithium in proportion to its reserves than either Argentina or Chile.[318] Even though Bolivia has the lowest GDP per capital in South America, their hesitancy to permit foreign investments is based in a historical reality of resource exploitation. Bolivia was once the second-largest holder of natural gas preserves, before it was exploited by outside investors.[319] Even though foreign investment is required for the level of technical knowledge, skill, and financing requires, then-President Morales was hesitant to strike deals based on past exploitation and the local distrust of foreign companies.[320]

In 2020, President Luis Arce set goals of becoming the "world capital of lithium."[321] To advance lithium production, the Bolivian government announced it would allow eight foreign companies to engage in pilot programs to boost lithium carbonate production in 2021.[322] There are firms from Argentina, China, Russia and the

[312] Rio Grande, "How Bolivian Lithium Could Help Fight Climate Change", The Economist (last updated Jan. 21, 2022). https://www.economist.com/the-americas/how-bolivian-lithium-could-help-fight-climate-change/21806677.
[313] Edwin Miranda, "La Planta Industrial Para La Produccion de BAterias de Litio de Llipi Tiene Avance Fisico del 59%", Bolivia Energia Libre: Luz Para Todos (Fe. 19, 2021) https://www.boliviaenergialibre.com/energia/la-planta-industrial-para-la-produccion-de-baterias-de-litio-de-llipi-tiene-avance-fisico-del-59/.
[314] Samar Ahmad, "The Lithium Triangle: Where Chile, Argentina, and Bolivia Meet", Harvard International Review, Jan. 15, 2020, https://hir.harvard.edu/lithium-triangle/.
[315] Ibid.
[316] Ibid.
[317] Mathew Eisler, "Bolivian Lithium: Why You Should Not Expect Any "While Gold Rush" in the Wake of Morales Overthrow", Down to Earth (Nov. 20, 2019) https://www.downtoearth.org.in/blog/economy/bolivian-lithium-why-you-should-not-expect-any-white-gold-rush-in-the-wake-of-morales-overthrow-67833.
[318] Herbert Crowther, "Bolivia's Role in the Energy Transition Threatened by Lithium Uncertainty", Atlantic Council, August 6, 2019. https://www.atlanticcouncil.org/commentary/energysource-explains-bolivia-s-role-in-energy-transition-threatened-by-lithium-uncertainty/.
[319] Ibid.
[320] Ibid.
[321] Bostjan Videmsek, "In Search of Bolivia's White Gold", The Boston Globe (Jan. 15, 2022) https://www.bostonglobe.com/2022/01/15/opinion/search-bolivias-white-gold/.
[322] Ibid.

appears to be heading in a positive direction.[324] President Luis Acre has hired Benchmark Mineral Intelligence[325] to assist the government in developing a "lithium strategy for Bolivia."[326]

Bolivian lithium economics analyst, Juan Carlos Zuletta, has suggested that the previous failures to use lithium as an economic multiplier are due to Bolivia's restrictive laws requiring that the extraction process be state-controlled.[327] While the extraction process is different in Bolivia than Peru, Zuletta's advice that Bolivia expedite an international bidding process to find the most advanced and environmentally-friendly technology to produce lithium[328] might be worth consideration for the government of Peru as well, to avoid the resource curse. Zuletta also advises the Bolivian government to have a "sincere dialogue" with the people of the country about the terms and conditions of the contract. For example, the ACI joint-venture was terminated by political unrest around the disadvantageous royalties, lack of technology transfer, and other contractual agreements between ACI and the Government of Bolivia. Finally, but most importantly, Zuletta states:

> I am convinced that to move up the lithium value chain, lithium producing countries need to go beyond their own borders, and beyond lithium. [… S]ince more than 40 different chemical elements are required to build lithium batteries and electric vehicles, no single country is capable of managing this colossal endeavor. The good news is that all of those materials can be found in a select group of South American countries in quantities and qualities necessary to outcompete any other region in the world. […]
>
> My proposal can be summarized as follows: South American mining and manufacturing companies, primarily from Argentina, Bolivia, Brazil, Chile, Colombia and Peru, should establish a strategic alliance, not to control the price of lithium and other minerals, but to develop their economies through the creation of a lithium battery and electric vehicle hub for the Latin American and North American markets. This would most likely require an international association with the best battery and electric vehicle makers in the world to

I. LITHIUM AS AN ECONOMIC MULTIPLIER

[323] Ibid.
[324] Patricia Vasquez, "Can Bolivia Jump-Start its Lithium Industry? A Q&A with Analyst Juan Carlos Zuletta", Wilson Center (Feb. 25, 2022) https://www.wilsoncenter.org/blog-post/can-bolivia-jump-start-its-lithium-industry-qa-analyst-juan-carlos-zuleta.
[325] Benchmark Lithium Intelligence, "Price Reporting Agency & Market Intelligence for Lithium Ion Battery, Electric Vehicle & Energy Storage Supply Chains" (last accessed May 9, 2022) https://www.benchmarkminerals.com.
[326] Patricia Vasquez, "Can Bolivia Jump-Start its Lithium Industry? A Q&A with Analyst Juan Carlos Zuletta", Wilson Center (Feb. 25, 2022) https://www.wilsoncenter.org/blog-post/can-bolivia-jump-start-its-lithium-industry-qa-analyst-juan-carlos-zuleta.
[327] Ibid.
[328] Ibid.
[329] Ibid.

Peru has the potential to utilize lithium to be an economic multiplier. Mining investment can create shared value for nearby communities through supporting the development of local suppliers, creating local employment, developing local skills through education or training, improving local infrastructure, and ensuring stable sources of revenue via taxes and royalties for local governments.[330] The multiplier effects are the most pertinent spin-off effects from mining. Lithium mining has the unique potential to incentivize downstream lithium processing and battery production, to be discussed further in detail below. The most important immediate effects of lithium development for Peru will take place in the form of social policies, infrastructure and public services, and employment.[331] If MINEM is able to place appropriate restrictions on private lithium development, not only will Peru encourage foreign investment, but communities will reap the benefits of this investment.

II. PERU'S FOREIGN INVESTMENT POLICY

As the Peruvian lithium mining industry develops, it will be essential for Peru to maintain a legal framework that achieves the optimal balance between attracting foreign investors who will bring in the necessary technology and resources and ensuring that despite the entry of foreign players into the market, the Peruvian state continues to maintain its sovereignty and ability to act in the best interests of Peruvians from a sociopolitical, environmental, and economic perspective.

A. Legal Framework

Peru maintains an open investment environment highlighted by equality of treatment between foreign and domestic investors, few restrictions on international trade, and strong protections for contractual rights and property. Foreign investors in Peru have the same rights and duties as with local investors, can freely remit foreign currency abroad without any restraints, and are guaranteed access to local sources of credit.[332] Peruvian laws do not have any restrictions on foreign parties acquiring shares in Peruvian companies for any industry[333] and is considered a regional leader in business registration efficiency, taking an average of only 7.5 days to complete the process as compared to the Latin American average of 41.5 days.[334] Moreover, Peru also ranked as the third cheapest country to set up a company, costing just $591 compared to an average of $1,166 in the region.[335] In addition, there are no nationality or residency requirements for directors of entities established in Peru.[336] With respect to property rights, expropriation is permitted only for the exceptional cases of pursuit of national security or public interest, and upon payment of just compensation.[337]

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[330] Aaron Cosbey & Howard Mann. "Mining A Mirage? Reassessing the Shared-Value Paradigm in Light of the Technological Advances in the Mining Sector." International Institute For Sustainable Development, 2016. https://ccsi.columbia.edu/sites/default/files/content/docs/our%20focus/extractive%20industries/mining-a-mirage-CCSI-IISD-EWB-2016.pdf.
[331] Ibid.
[332] José Antonio Olaechea, "Doing Business in Peru: Overview, Practical Law Country,", Thomson Reuters Practical Law, accessed April 17, 2022, https://uk.practicallaw.thomsonreuters.com/0-500-7812?transitionType=Default&contextData=(sc.Default)&firstPage=true.
[333] Ibid.
[334] Marca Peru, "Why invest in Peru: key reasons to explore untapped opportunities," Reuters (Feb. 2, 2022), https://www.reuters.com/article/sponsored/why-invest-in-peru-key-reasons-to-explore-untapped-opportunities.
[335] Ibid.
[336] Jose Antonio Olaechea, "Doing Business in Peru: Overview" Thomson Reuters: Practical Law, (Sep. 1, 2021).
[337] "Trade Policy Review Report by the Secretariat, Peru," World Trade Organization, August 27, 2019, https://www.wto.org/english/tratop_e/tpr_e/s393_e.pdf.

Peru offers foreign investors a variety of tax incentives, depending on the nature and location of their business. Some of the most notable include a Value Added Tax anticipated recovery regime, granting the right to recover VAT paid on the import and/or local acquisition of goods, services or construction contracts in the pre-productive stage of a project, an exemption on VAT and excise tax for exports, and for mining specifically, a special depreciation rate of 20% for entities engaged in mining.[338]

Further reinforcing the domestic law regime are Peru's ratifications of the 1958 Convention on the Recognition and Enforcement of Foreign Arbitral Awards, and the International Center for the Settlement of Investment Disputes, allowing foreign investors who may be aggrieved by Peruvian state action involving their investments to avail of robust dispute mechanisms.[339]

With respect to mining investors, one benefit of the Peruvian legal framework is that the commercialization of mining products operates as a free market,[340] and is currently not subject to any regulation by the government.[341] Moreover, Peru's efforts to maintain accreditations from prominent international bodies promotes investor confidence. Peru has strived to obtain validation from the Extractive Industries Transparency Initiative, which found Peru as a complaint country having openly published all company payments and government revenues from the oil, gas, and mining industries, as well as the Organisation for Economic Co-operation and Development (OECD), which had recently decided to open discussions with Peru to join the organization.[342]

Stability or stabilization agreements are commitments by the host government under investment contracts not to alter the regulatory framework governing the project, by legislation or any other means, outside specified circumstances such as the consent of the other contracting party, restoration of the economic equilibrium, and/or payment of compensation.[343] While such agreements may take different forms, two of its notable clauses, which are quite negative for a country, are the "freezing clause," which guarantees that the applicable domestic law at the time of execution of the contract shall remain in force with respect to that contract, to the exclusion of subsequent legislation,[344] and the "economic equilibrium clause," which requires the investor to comply with new laws passed after the execution of the contract, but also requires that the host state compensate the investor for the cost of complying with these new laws such as through adjusted tariffs, extension of the concession, and monetary compensation.[345] Such clause according to Professor Radon, the supervisor of this Columbia

[338] Jose Antonio Olaechea, "Doing Business in Peru: Overview" Thomson Reuters: Practical Law, (Sep. 1, 2021).
[339] "2021 Investment Climate Statements: Peru," U.S. Department of State, accessed April 17, 2022, https://www.state.gov/reports/2021-investment-climate-statements/peru/.
[340] Interview with Brenda Silva on April 19, 2022.
[341] Based on Internal Materials shared by Karin Acosta.
[342] "2021 Investment Climate Statements: Peru," U.S. Department of State, accessed April 17, 2022, https://www.state.gov/reports/2021-investment-climate-statements/peru/.
[343] Lorenzo Cotula, "Regulatory Takings, Stabilization Clauses and Sustainable Development," OECD Investment Policy Perspectives, 70 (2008), http://dx.doi.org/10.1787/ipp-2008-4-en.
[344] Ibid. at 73.
[345] "Stabilization Clauses and Human Rights," International Finance Corporation, May 27, 2009, https://www.scribd.com/fullscreen/16894739?access_key=key-2lif4pk075rqjxu5pgiz.

Capstone, should never be adopted or accepted by any country and should be rejected. He also notes that no developed country accepts such clauses.

Stabilization Agreements

Under Peruvian law, mining companies are granted the opportunity to enter into stability agreements with the government, particularly with ProInversion, the private investment promotion agency of Peru, for non-industry specific benefits, and MINEM for mining company-exclusive benefits. Stability agreements entered into with ProInversion are available to qualified foreign and national investors as well as beneficiaries or recipients of the investment. They may enter into agreements that guarantee the following:

1. Equal treatment, by which the national legislation does not discriminate against investors participating in enterprises, due to their status of foreign person;
2. Stability of the corporate income tax regime in force at the time the agreement is concluded;
3. Stability of the system of free availability of foreign currency and remittance of profits, dividends and royalties; and
4. Stability of the labor hiring regime.[346]

For qualified mining investors, they may enter into stability agreements with MINEM for any of the following:

1. Tax, exchange, and administrative stability;
2. Deduction of certain domestic taxes;
3. Guaranteed compensation of the cost of health benefits paid to workers and dependents;
4. Non-discrimination in exchange matters;
5. Unrestricted right to remit profits, dividends, financial resources and free availability of foreign currency in general;
6. Free internal or external commercialization of the production;
7. Administrative simplification for procedural celerity, based on the presumption of veracity and positive administrative silence in the administrative procedures; and
8. Non-discriminatory treatment with respect to other sectors of the economic activity.[347]

Some experts believe that while stability agreements can help protect investments from undue host state interference, they may also distort the host state's pursuit of sustainable development, particularly, the policy imperative to balance economic, environmental, and social considerations.[348] For instance, the operation of a stabilization clause may require the host state to continue to apply a social or environmental regulation which is not sufficient to comply with international standards. Moreover, stability agreements which are not carefully crafted could

[346] "Global Mining Guide – Peru," Baker Mckenzie, accessed April 17, 2022, https://resourcehub.bakermckenzie.com/en/resources/global-mining-guide/latin-america/peru/topics/global-mining-guide.
[347] Ibid.
[348] Lorenzo Cotula, "Regulatory Takings, Stabilization Clauses and Sustainable Development", OECD Global Forum on International Investment VII (Mar. 28, 2008) at 2.

give the investor leverage to negotiate informally a lower level of compliance with a new law, or a delay in the law's applicability to the project, or compensation for compliance, notwithstanding any detrimental effect to Peruvian nationals.[349] In other words, poorly drafted stability agreements or clauses could lead to the host state to excessively surrendering its sovereignty to protect the investment, denying the state its proper role as legislator, and creating a financial disincentive for the host state, thus "chilling" or hindering the application of dynamic social and environmental standards over the life of a long-term project.[350] And, as noted above, Professor Radon feels that the negative effect of such clauses is so overwhelming that they should be rejected.

These experts suggest several solutions to ensure that stability agreements to not create a regulatory "chilling effect" on the host state, including:[351]

1. In drafting stabilization agreements, refer to contracts and models from OECD countries, particularly those that limit the scope of stabilization clauses, as these can serve as reference for gathering good practice criteria;

2. In drafting stabilization agreements, explicitly cite exceptions involving Peru's international law commitments, especially with respect to environmental and social standards; and

3. Improve transparency of such provisions or agreements, such as by publishing investment contracts and project information to give affected communities and other stakeholders the chance to review and critique the provisions.

It must be noted that freezing clauses are not features of contracts entered into by OECD countries. Instead, the scope of the stabilization clauses committed by these countries is generally restricted to discriminatory regulation and may exclude regulation on safety, security, and other public concerns such as environmental or social legislation.[352]

Thus, it is recommended that if stabilization agreements or clauses are absolutely insisted by potential lithium mining investors, the Peruvian government severely limit the scope and duration of such agreements or clauses. Particularly, to limit the scope of such commitments to matters pertaining to non-discrimination and expropriation while ensuring a non-waiver of Peru's international law commitments regarding the environment, human rights, and other social issues, and limit the period of such commitment to as short as possible. In addition, according to Professor Radon, a foreign mining company should fully and unconditionally guarantee all of the obligations of its Peruvian operating subsidiary, especially

[349] International Finance Corporation, "Stabilization Clauses and Human Rights" (May 2009).

[350] Ibid.

[351] Practical Law Finance , "Understanding Stabilization Clauses in International Investment Agreements", Westlaw, accessed April 17, 2022, https://1.next.westlaw.com/Document/I03f4d797eee311e28578f7ccc38dcbee/View/FullText.html?originationContext=document&transitionType=DocumentItem&ppcid=f72b4bf91ecf49d9942a8db671a6dca4&contextData=(sc.Default).

[352] Katja Genhe & Romulo Brillo, "Stabilization Clauses in International Investment Law: Beyond Balancing and Fair and Equitable Treatment," Beiträge Zum Transnationalen Wirtschaftsrecht 11 (March 2017), https://institut.wirtschaftsrecht.uni-halle.de/sites/default/files/BeitraegeTWR/Heft%20143.pdf.

for potential environmental liabilities, if any stabilization agreement or clause is to be granted. A Peruvian mining company should have its stockholders give such a guarantee.

For guidance on how to draft stabilization agreements, the Peruvian government may refer to the OECD Guiding Principles for Durable Extractive Contracts, which recommend that durable extractive contracts allow host governments to pursue "bona fide, non- arbitrary, and non-discriminatory changes in law and applicable regulations, covering non-fiscal regulatory areas to pursue legitimate public interest objectives."[353]

B. Areas of Concern for Foreign Investors

What primarily dissuades foreign investors from investing in Peru involve factors external to the legal system. Corruption and political instability remain key issues which reasonably could turn away foreign investors. Corruption, social conflict, and political instability negatively affect Peru's investment climate. Transparency International ranked Peru 105th out of 180 countries in its 2021 Corruption Index, 11 spots lower than its ranking in the 2020 study, and currently ranked lower than all the countries in the Lithium Triangle.[354] For perspective, Chile is ranked 27th in the same study. With respect to social conflicts, it has been reported that as of January 2021, there were 145 active social conflicts in Peru, with 66 of such conflicts occurring in the mining sector.[355] Emily Hersh, a private-sector mining consultant specializing in lithium development, explained that political instability is a central concern to mining companies in Peru. In order for a company to be willing to invest around USD1 billion, it must be very confident that Peru's government will provide stability for the firm's operations to continue for it to receive a significant return on its investment.[356] Regarding social conflict, Hersh adds that social conflict is something that cannot be prevented as relationships are ongoing. She recommends that firms must take their relationship with the community "seriously" to provide thoughtful and meaningful engagement.[357] The ability to mitigate is partially, but not fully within the firms' control.

Constant consultation with entities such as the World Bank, OECD, and other advising bodies is key in helping solve these institutional issues. In addition, Peru should exert all efforts in ensuring accession into the OECD, which would help promote a positive image in international circles and boost investor confidence.

RECOMMENDATIONS:
Continue the process for accession to the OECD
Membership in the OECD manifests a commitment to compliance with policies aimed at the economic and social well-being pursuant to international standards and will consequently boost investor confidence.
Limit the scope and duration of stabilization agreements with foreign investors

[353] OECD, "Guiding Principles for Durable Extractive Contracts" (2019), https://doi.org/10.1787/55c19888-en.
[354] "Corruption Perceptions Index", Transparency International, accessed April 17, 2022, https://www.transparency.org/en/cpi/2021.
[355] U.S. Department of State, "2021 Investment Climate Statements: Peru".
[356] Interview with Emily Hersh, March 8, 2022
[357] Ibid.

Poorly drafted stabilization agreements may lead a "chilling" effect on the ability of Peru to protect its own citizens and comply with international obligations. Significantly limiting and narrowing the scope and duration of these stabilization agreements is key.

III. FOLLOW THE MONEY: PERU'S MINING REVENUE SHARING FRAMEWORK

Mining revenue in Peru comes from different sources namely, the canon minero,[358] mineral royalties,[359] the special tax on mining,[360] the special obligation on mining,[361] and the derecho de vigencia (validity right).[362]

The revenue earned from mineral extraction is redistributed to subnational governments with mineral revenue sharing based on derivation. Under this system, natural resource revenues are shared by tax assignments to subnational governments, or by fiscal transfers from central to subnational governments.[363] In Peru, revenues from collection of taxes and fees on mining operations are allocated with a large portion thereof going to provinces and districts where the mines are located.[364] Population levels and basic needs within mineral producing regions are likewise considered.[365]

The national government transfers most of the revenue from mining operations to producing areas: ninety-five percent (95%) of the revenue from both the canon minero and royalties are transferred to subnational governments in producing regions.[366] The remaining five percent (5%) is allocated to public universities within the producing regions. [367] These revenue transfers made from the canon minero, mineral royalties, and derecho de vigencia to district, provincial and regional governments are required to be used for public investment projects.[368] In the case of the canon minero and mining royalties, the five percent (5%) share that is allocated to universities must be spent mainly on scientific and technological research.[369]

A. Legal Framework

Canon Minero

[358] Ley del Canon, Law No. 27506 (2001).
[359]Ley Que Modifica La Ley 28258 Ley de Regalia Minera , Law No. 29788 (2004).
[360] Ley Que Crea El Impuesto Especial a al Mineria, Law No. 29789 (2011).
[361] Ley que establece el marco legal del Gravamen Especial a la Minería, Law 29790 (2011).
[362] Ley General de Mineria, Decree No. 014-92-EM (1992), Article 57.
[363] "Peru: Building a More Efficient and Equitable Fiscal Decentralization System", World Bank Group, last modified March 2017, https://documents1.worldbank.org/curated/en/106651568318660229/pdf/Peru-Building-a-More-Efficient-and-Equitable-Fiscal-Decentralization-System.pdf.
[364] Maria Lara Aresti, "Mineral Revenue Sharing in Peru", National Research Governance Institute (April 2016), https://resourcegovernance.org/sites/default/files/documents/mineral-revenue-sharing-in-peru_0.pdf at 5.
[365] Ibid. at 20.
[366] Ibid. at 5.
[367] Ibid.
[368] Ibid at 206. See also Ley del Canon at Article 6; Ley de Regalia Minera at Article 9; Codigo Procesal Constitucional, Law No. 28327 at Article 1.
[369] Aresti, "Mineral revenue sharing in Peru", 6. See Ley del Canon at Article 6; Ley de Regalia Minera at Article 9.

The canon minero is the share of the local governments and regional governments of the total income obtained by the state for economic exploitation of mining resources.[370] This comprises fifty percent (50%) of the corporate income tax collected from the mining company.[371]

It is distributed among the municipal and regional governments in a producing region.[372] It uses derivation as its main criteria but considers population and basic needs when distributing the revenue to district governments of the producing province, and to provincial governments of the producing region.[373] Seventy-five percent (75%) of the canon minero is allocated for municipal governments while the remaining twenty-five percent is earmarked for regional governments.[374]

Revenue transfers received from the canon minero are set aside to finance public investment projects aimed at providing universal services that benefit the community, and that are aligned with the competencies of the recipient governments.[375] Regional and local governments must allocate 20 percent of the revenue received from the canon to public universities within their jurisdiction, and such revenue must be used exclusively to finance scientific and technological research that promotes regional development.[376]

Mineral Royalties

Mineral royalties are payments to the state for the right to exploit mining resources.[377] It must be paid on a quarterly basis and are calculated based on the greater of either: (a) the amount determined in accordance with a statutory scale of tax rates based on the company's operating profit margin and applied to the company's operating profit; and (b) 1% of the company's net sales, in each case during the applicable quarter.[378] The royalty rate applicable to the company's profit is based on its operating profit margin according to the statutory scale of rates ranging between 1% and 12%. Royalty payments are progressive, which means that companies with higher operating margins would pay higher amounts.[379]

Similar to the canon minero, royalty revenue is shared mainly based on derivation. Population levels, infrastructure deficits, and basic needs are criteria used for distributing the revenue across district governments of the producing province, and across provincial governments of the producing region. [380] The royalty sharing arrangement assigns a higher proportion of resources to the government of the producing district and a lower share to the

[370] Ley del Canon at Article 6.
[371] The corporate income tax (regulated by Decree No. 122-94 of 1994) is imposed at a rate of 29.5 percent on profits of companies and is collected on an annual basis by the National Customs and Tax Administration (acronym in Spanish: SUNAT).
[372] Aresti, "Mineral Revenue Sharing in Peru", 20.
[373] Ibid.
[374] Ley de Regalia Minera at Article 9.
[375] Ley del Canon at Article 6; Ley de Regalia Minera at Article 9; Codigo Procesal Constitucional at Article 1.
[376] SeLey Que Modifica Diversos Articulos de la Ley No. 27506, Ley de Canon, Ley No. 28077 (2003) at Article 4. See Ley Que Autoriza Credito Suplementario en el Presupuesto del Sector Publico para el ano Fiscal 2005, Law No. 28562 (2006); Decreto de urgencia 005-2014, Urgency Decree No. 005-2014 (2014).
[377] Ley de Regalia Minera at Article 9.
[378] Law No. 29788 modified the tax base on which royalties were being calculated.
[379] Aresti, "Mining revenue sharing in Peru", 18.
[380] Ibid. at 22.

government of the producing region.[381] Eighty percent (80%) of the mineral royalty is allocated to municipal governments and twenty percent (20%) is allocated to regional governments.[382]

Revenue received from mineral royalties must be used to "finance or co-finance productive investment projects that allow the mining sector to be embedded in the economic development of each region".[383] Up to forty percent (40%) of royalty payments can be used for maintenance works.[384] In the case of public universities, the resources must be exclusively used for investing in scientific and technological research. Meanwhile, fifty percent (50%) of the share assigned to district governments must be invested in the community where the resource is located.[385]

Special Tax on Mining

Mining concessionaires are also required to pay a special mining tax for the sale of metallic resources, regardless of the state in which they are sold.[386] The applicable special mining tax (between 2% and 8.4%) is determined by the quarterly operating profit margin of the company and is deductible as expenses for income tax purposes.[387]

Special Obligation on Mining

This special obligation is imposed on companies benefiting from exemptions under fiscal stability clauses.[388] Mining royalties and special mining tax regimes are not applicable to holders of mining concessions who have entered into mining stability agreements before the establishment of the mining royalty regime and special mining tax. From October 1, 2011, holders of mining concessions who have entered into mining stability agreements are expected to enter into agreements with the Peruvian Government to pay, as a "voluntary contribution," a special mining burden for the exploitation of non-renewable natural resources.[389] The special obligation on mining is payable on a quarterly basis and is calculated based on the operating profit derived exclusively from the sale of metallic resources.[390]

Derecho de Vigencia (Sub-Surface Fee)

The derecho de vigencia is a fixed annual payment that the owner of any small, medium, large, or artisanal small-scale mining concession, whether exploring and producing, pays for the concession area.[391] The Geological, Mining, and Metallurgical Institute (INGEMMET) determines the fee based on the extension of the area and the type and scale of the activity.[392]

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[381] Ibid.
[382] Ibid. at 23.
[383] Decreto de urgencia 005-2014, Urgency Decree No. 005-2014 (2014).
[384] Reglamento de la Ley No. 29970 en lo Referido al Sistema Integrado de Transporte De Hidrocarburos, Decree No. 005-2014 (2014).
[385] Ley de Regalia Minera at Article 9.
[386] Ley Que Establece El Marco Legal del Gravamen Especial a la Mineria, Law 29790 (2011).
[387] Ibid.
[388] See Ley Que Establece El Marco Legal del Gravamen Especial a la Mineria, Law 29790 (2011).
[389] Ibid.
[390] Ibid.
[391] Ley General de Mineria, Decree No. 014-92, at Article 57.
[392] Aresti, "Mineral Revenue Sharing in Peru", 18.

The derecho de vigencia collected from regular mining benefits governments of the producing districts where the concession is located, which receives seventy-five percent (75%) of the amount collected within their boundaries, and off the remaining portion, the INGEMMET receives twenty percent (20%) while the MINEM receives five percent (5%).[393] On the other hand, the derecho de vigencia collected from small and artisanal mining operations benefits the governments of the producing districts where the concession is located which receives seventy-five percent (75%), and the regional government of the region where the concession is located which receives twenty-five percent (25%) (based on basic needs, infrastructure deficits and population).[394]

B. Areas of Concern

The mining revenue generation system in Peru as described above is robust and is reasonably expected to spur economic growth and social gains, especially for the local communities surrounding the mining projects. However, the exploitation of natural resources does not necessarily lead to higher economic growth, and even if it does, it does not automatically translate to better economic and social improvement outcomes. In Peru, revenue is generated from mining activities, but this is disconnected from the rest of the economy, with national, macroeconomic indicators looking good, but with local communities lagging behind.

Currently, Peru is experiencing a local "resource curse" with mining communities in the subregions only feeling the brunt of mining instead of its intended economic and social benefits. "Resource curse" traditionally means that countries with an abundance of natural resources, such as lithium, fare worse economically with communities experiencing no long-term economic benefit or stability despite the exploitation and exportation of the product.[395] In contrast with the conventional understanding of the resource curse, which expects macroeconomic havoc and national-political mismanagement, local resource curse results in a fallout from resource boom affecting local communities the hardest. In Peru, even with its GDP continuously growing with an expected GDP growth of around 3 percent annually in 2022, 396 local communities situated in mining sites only feel the mining industry's downsides, rather than its benefits. The Natural Resource Governance Institute's "Revenue Sharing Case Study: Mineral Revenue Sharing in Peru" point to the following signs of the local resource curse which are evident in subnational governments receiving excessive revenue transfers from central governments: "increase in corruption of public works; increase in the political dispute between rival groups; higher levels of patronage; deterioration of governance; and excessive public spending that distorts salaries and affects agriculture… the Canon system tends to create perverse incentives that discourage open and democratic government… in the absence of a robust civil society, excessive funding tends to encourage clientelism and corruption rather than accountable and transparent administration at the local level."[397]

[393] Ibid. at 24.
[394] Ibid. at 16, 25.
[395] Javier Arellano-Yanguas, "Aggravating the Resource Curse: Decentralisation, Mining and Conflict in Peru", The Journal of Development Studies, (2011) 47:4, 617-638, DOI: 10.1080/00220381003706478.
[396] "Overview," The World Bank in Peru, The World Bank, last modified April 12, 2022, https://www.worldbank.org/en/country/peru/overview#1.
[397] Maria Lasa Aresti, "Mineral Revenue Sharing in Peru", Natural Resource Governance Institute, (April 2016).

Interestingly, the local resource curse is more observed in producing regions which receive excessive revenue transfers.[398] his can be attributed to Peru's derivation revenue distribution system that has created large differences and unequal impact in producing and non-producing regions, which in turn, has contributed to an increase in regional disparities and conflict. Arguably, regions where mining occurs deserve more allocation of the tax collected from mining companies since these regions are directly affected by extraction activities; however, the division of funds isolates rural regions that do not immediately benefit from any economic development through mining operations.[399] This brings significant equity, volatility, and public financial management challenges at the local level. This also creates extreme dependency by producing regions to national government transfers. In fact, more than 80% of the budgets of some subnational governments depend on resource revenue transfers from the central government.[400]

Despite these sizeable revenue transfers to the regions, local communities do not fully experience the benefit of mining revenue derived from their region often resulting in social conflict. Mining revenues which are required to be earmarked for investments and infrastructure projects for the benefit of the community are underutilized and have not resulted in significant improvements in the local mining communities.[401] These transfers have failed to adequately provide necessary social structures such as health care, education, and other public investments to improve living conditions in the subregions.[402]

The failure of local and regional governments to effectively use and manage the mining revenues it receives contributes to the problem of underutilization, thus limiting the benefits at the regional and local level. The peripheral conditions of most mining communities means that they have lower human capital and institutional capacity, which negatively affects the efficiency in local public tax administration and the quality of the public goods provided.[403] In fact, a study reveals that governments that receive large payments from the canon minero are unable to spend revenues adequately, and on average, the governments only utilize 57% of the funds.[404] The regional and local governments' lack of capacity to properly utilize mining revenue is due, in large part, to their inability to handle a large influx of funds.[405] To make things worse, underutilization results in an abundance of unspent money, which leads to the unintended consequence of corruption.

[398] Ibid.
[399] Margaret Boland, "Corporate Conquistadores: Peru's Mineral Extraction Industry Boosts Economy While Rural Poor Continue To Suffer", Council On Hemispheric Affairs, (July 12, 2013) http://www.coha.org/corporate-conquistadores-perus- mineral-extraction-industry-boosts-economy-while-rural-poor-continue-to-suffer/.
[400] Andrew Bauer, Uyanga Gankhuyag, "Natural resource taxation and revenue sharing in Asia", Local Public Finance and Capacity Building in Asia : Issues and Challenges (December 2020), https://doi.org/10.1787/a944b17e-en.
[401] Omar Zambrano, Marcos Robles and Denisse Laos, Global Boom, Local Impacts: Mining revenues and subnational outcomes in Peru 2007-2011, IDB Working Paper Series No. IDB-WP-509, (Washington, DC: Inter-American Development Bank, May 2014), 8.
[402] Margaret Boland, "Corporate Conquistadores: Peru's Mineral Extraction Industry Boosts Economy While Rural Poor Continue To Suffer", Council On Hemispheric Affairs, (July 12, 2013) http://www.coha.org/corporate-conquistadores-perus- mineral-extraction-industry-boosts-economy-while-rural-poor-continue-to-suffer/.
[403] Mauricio Oyarzo, Dusan Paredes, "The impact of mining taxes on public education: Evidence for mining municipalities in Chile", Resources Policy, 70 (March 2021) https://doi.org/10.1016/j.resourpol.2018.05.018.
[404] 2015 Columbia Capstone, p. 70.
[405] 2015 Columbia Capstone, p. 73.

To mitigate the local resource curse and to ensure sustainable and equitable economic development is felt in the regions, the Peruvian government can focus in efforts on increasing mining revenue collection and ensuring fair revenue distribution.

With respect to increasing revenue collection, the OECD recommends increasing royalties from the mining sector, and investing that mining revenue into public services, such as healthcare and education.[406] The current mining tax scheme, particularly royalties are comparatively low, with many mineral exporting nations.[407] Even without an increase in royalty percentages, Peru saw a 165% increase in mining royalty revenues from 2020 to 2021 because of increased global demand and prices for metals.[408] President Castillo has supported increasing the percentage of royalties to fund social programs. However, it is worth noting that increasing mining royalties must be weighed against fears of "chilling" foreign investment, tax stability contracts, and widespread corruption.

Increasing royalties alone will not increase the economic prosperity of the local community without fair revenue distribution. One proposed solution is to federally regulate contractual agreements for value-chain items along the production linkage chain. In 2014, former President of Colombia Juan Miguel Santos introduced a system by which the Colombian government established set prices for commonly contracted items produced by local firms.[409] Ensuring a minimum per-item price prevented a "race to the bottom" where local actors would undersell their products to compete for foreign contracts.[410] This limits private negotiations, which involve vast power differentials between foreign firms and local production; value is preserved while reducing corruption and individual kickbacks. Another proposed solution is to greatly improve economic transparency on the citizen level. By enabling everyday citizens to become investigators of corruption, governments demonstrate trust in the local population's ability to make educated decisions about what value a company will or will not bring to the community. Additionally, studies have demonstrated that economic transparency significantly reduces the risk of misinformation and public protest, with a Georgetown University study finding that "the risk of social mobilization significantly decreases as economic transparency increases".[411]

Fair revenue distribution to the regions must also be coupled with means to lessen corruption, royalties from pre-tax gross revenues must be preserved in the form of a trust that may only be withdrawn for pre-agreed sustainable development projects as part of a Sustainable Development Plan. While decentralization of operations is ultimately the goal, as mentioned above, local communities like Macusani are not sufficiently trained or equipped to allocate and distribute the millions of Pesos that would derive from Lithium production royalties. The high

[406] "Tax Incentives in Mining: Minimising Risks to Revenue", Organisation for Economic Co-operation and Development, accessed May 7, 2019, https://www.oecd.org/tax/beps/tax-incentives-in-mining-minimising-risks-to-revenue-oecd-igf.pdf.
[407] Ibid.
[408] Zachary Skidmore, "Peru reports a 60% increase in tax revenues from mining", Mining Technology, (Jan. 10, 2022), https://www.mining-technology.com/news/minem-tax-revenues-mining-peru/.
[409] Colombia Policy Priorities for Inclusive Development, Organisation for Economic Co-operation and Development, (Jan. 2015), https://www.oecd.org/about/publishing/colombia-policy-priorities-for-inclusive-development.pdf.
[410] Ibid.
[411] James R. Hollyer, B. Peter Rosendorff, and James Raymond Vreeland,"Transparency, Protest and Political (In)Stability", (Sep. 2013), https://ucrpoliticaleconomy.ucr.edu/wp-content/uploads/2013/09/Rosendorff.pdf.

value of Lithium compared to other mining products in Peru necessitates an incredibly careful plan for the eventual windfall of foreign funds coming to traditionally underserved communities.

C. Connection to Mining Vision 2030

The first article of Peru's Mining Vision 2030 directly relates to the role of regional and municipal governments. Specifically, section one calls for sufficient resources for regional and local governments to develop their capacities. It also prioritizes the need for enhances transparency within federal, regional and municipal governments.[412] Considering Mining Vision 2030 references the importance of transparency considering there is corruption in the mining sector. Increased transparency lowers the possibility of corruption to occur. In addition, it also calls for governments to be more efficient in developing their capacities, which can refer to ensuring more equal allocation of mining revenue. Since unequal revenue sharing has led to conflict, Mining Vision 2030 seeks to promote transparency and equality in the allocation of mining revenue.

RECOMMENDATIONS:
Build institutional local government capacity
The capacity to administer and collect taxes can be built, but many sub-national governments lack the expertise and the resources to reach minimum standards of efficiency. Consequently, the national government must provide regional and local governments training and support in developing their tax administration and tax collection capacity and in formulating public benefit projects that utilize mining revenue transfers effectively, all in conjunction with the central government.
Expand local community capacity development especially on mining education
Technology and know-how from foreign established mining companies can only be useful for Peru if it has human and institutional capacities to absorb them. To foster self-sustaining local communities and build a competitive local workforce, the government can invest in local capacity building projects to educate and involve qualified locals in the mining process. A prime example that should be expanded and built on is the project between Montana Technology Universidad Nacional del Altiplano to advance mining education by producing future Peruvian mining engineers and experts.
Review the mining revenue generation and distribution formula
The OECD recommends increasing mining royalties and designing and implementing and integrated reform to subnational finances which includes increasing the proportion of investment funds such as mining royalties allocated to the regional level and reducing the proportion to municipalities and adopting a more equitable mechanism to disburse investment funds across regions.[413]
Increase transparency in regional transfers and revenue allocation through the publication of disaggregated data on tax and royalty payments by companies to the Peruvian government

[412] Grupo Vision Mineria 2030,. "Vision a la Mineria en el Peru al 2030," Ministerio de Energia y Minas, (Jan. 2019).
[413] "Public Governance Reform Peru Highlights 2016", OECD, accessed April 25, 2022, https://www.oecd.org/gov/public-governance-review-peru-highlights-en.pdf.

This is necessary to improve trust between subnational and national governments, align the expectations of local communities with the magnitude of revenues received at the local level, and increase accountability of subnational governments accountable. SUNAT publishes aggregate information on the payment of taxes and royalties for the entire sector in its periodical Nota Tributaria. However, these payments should be disaggregated by company, and preferably by project.
Establish a trust where revenues from the national government will be placed
The regional governments can preserve mining revenues it receives from the national government in the form of a trust that may only be withdrawn for pre-agreed sustainable development projects as part of a Sustainable Development Plan. This diversifies the economic production of the city and reduces corruption.
Federally regulate pricing of vital equipment and labor produced by local firms
The national government, through MINEM, can establish set prices (e.g. minimum wage, minimum pricing for industrial products and energy) for commonly contracted items procured by local firms. This will reduce the power differentials between foreign and local firms by minimizing undersells by the locals.

IV. LINKAGES AND INFRASTRUCTURE: USING THE MINING INDUSTRY AS AN UPSTREAM ECONOMIC MULTIPLIER

The presence of the mining industry from lithium mining can be leveraged "upstream" to create economic linkages and infrastructure within Peru. This can be done through either production or consumer linkages, such as industries that would support the mining sector.

Promoting upstream, downstream, and horizontal linkages creates lasting value for local communities beyond that derived from resource extraction revenues. Traditionally, mining companies invest in infrastructure that they use exclusively. However, according to Columbia's Center for Sustainable Investment, "shared-use" agreements reinforce opening up the mining infrastructure to benefit other mining companies, local businesses, and communities.[414] For example, power plants and distribution grids needed for the mining process can bring cheaper electricity to local communities; roads can be optimized for community member and local transportation; and water and telecom infrastructure can be used to promote development.[415] In addition to constructing infrastructure, utilizing upstream production linkages is vital to the economic growth of the Macusani district. For instance, Macusani Yellowcake may engage with the producers of textiles which the region is known for[416] in producing clothing for its workers that is suitable for the weather conditions of the region. Moreover, novel mining operations require investments in equipment, transportation, goods, and labor, which leads to key financial and technological benefits for the local population. Linkages between mining and the engineering, construction, and industrial manufacturing industries may come at a higher initial

[414] "Shared Use of Mining-Related Infrastructure (Rail, Port, Power, Water, and ICT)", Columbia Center on Sustainable Development, accessed May 7, 2022, https://ccsi.columbia.edu/content/leveraging-mining-related-infrastructure-investments-development-rails-port-power-water-and.
[415] Ibid.
[416] Julie Jennings, "The Land of Lakes and Rich Textiles: Picturesque Puno," TourHQ, (June 23, 2020), https://www.tourhq.com/article/the-land-of-lakes-and-rich-textiles-picturesque-puno.

investment to train and equip employees, but ultimately leads to savings on labor in the long-term.[417] This would require highly skilled and trained Peruvian workers. Though there may be an initial low supply of these high skilled workers, this requirement would create a larger supply of these skilled workers, which would benefit Peru's economy.[418] Wherever possible, foreign firms should be required to contract with local enterprises and derive at least 60% of their labor force from the local community to make a sustainable impact on economic growth.[419]

Direct government advice on implementation of shared-use agreements can be provided by CCSI. In 2013, CCSI supported the Government of Australia in developing an economically, legally and operationally rational framework to enable the shared use of mining-related infrastructure, including rail, ports[420], power[421], water[422], internet and telecommunications[423].[424] While this is extremely valuable, it is important that each government ministry reach a consensus before negotiations begin around which shared-use agreements they believe should be prioritized for development, and what they are willing to concede for these agreements (e.g. lower tax rates, less fiscal receipts).[425] CCSI advises that it would be worth it to lose potential revenue in place of shared-use agreements if (1) the infrastructure project would be too large or costly for the government to do independently and (2) there is an actual use in the community for the infrastructure. Social benefits may also outweigh the loss in revenue (e.g. a company commitment to providing access to clean drinking water).[426] Ownership of the infrastructure can be given on a concession basis to whomever is operating the mine at that time but will ultimately be owned by the government.[427][428]

Additionally, economic advisors highly suggest regional international agreements that allow developing nations to work together in a global value chain to maximize their benefit from mineral extraction.[429] For example, Peru, Chile, and Bolivia could work in coordination to leverage a shared-use agreement around roads, rails, and ports to facilitate the transportation of Bolivia's lithium to the coastal region for export.[430] Such an agreement should come from regional dialogue for the best chances of success.[431] Considering the Inter-American

[417] Machakita, Tomohiro and Yasushi Ueki. "Impact of Production Linkages on Industrial Upgrading: Organizational Evidence of a Global Supply Chain". ADBI Working Paper Series. 2012.
[418] Interview with Martin Dietrich Brauch, March 6, 2022
[419] Mining Vision 2030: Making it a Reality. Columbia Capstone 2019.
[420] "A Framework to Approach Shared Use of Mining Related Infrastructure: Rail and Port for a framework approach to shared-use rails and ports", Columbia Center for Sustainable Investment, https://ccsi.columbia.edu/sites/default/files/content/docs/our%20focus/extractive%20industries/Framework-for-shared-use-_-Rails-and-Ports-CCSI.pdf.
[421] Ibid.
[422] Ibid.
[423] Ibid.
[424] Ibid.
[425] Ibid. at 6.
[426] Ibid.
[427] Ibid. at 8.
[428] "Toolkit on Cross-sector Infrastructure Sharing", Columbia Center for Sustainable Investment, https://ccsi.columbia.edu/sites/default/files/content/docs/our%20focus/extractive%20industries/CrossSectorInfrastructureSharingToolkitfinal170228.pdf.
[429] Perrine Toledano, "Global value chains and resource corridors: The nexus is regional integration", Great Insights Magazine, (Dec. 2015), https://ccsi.columbia.edu/sites/default/files/content/docs/our%20focus/extractive%20industries/Great-Insights-Global-value-chains-and-resource-corridors-Dec-2015-Jan-2016_0.pdf.
[430] Ibid. ("If the shortest route to the sea is across a national border, those companies are likely to favour such a route to avoid the additional capital expenditure that would be required to reach a port within the country's borders.").
[431] Interview with Nicolas Perrone, February 21, 2022.

Development Bank is supporting Argentina, Bolivia, Chile and Peru with their lithium mining sectors, this could be an ideal opportunity to engage in such dialogue. [432]

Finally, what are called "consumption linkages" from the extractive industries have the greatest potential to create employment and can potentially have the largest impact on the employment of local peoples, specifically women.[433] "Consumption linkages arise when personal incomes derived from resource extraction lead to an increase in demand for products from other sectors in the local economy. However, consumption linkages can bear a negative impact if the earned income is spent on imported products or shifts demand away from domestic products to foreign substitutes, in which case, the domestic industries will suffer."[434] Similarly, "upstream linkages" occur when the corporations transfer knowledge and technology to domestic suppliers.[435] It is shown that the greatest indicator of successful linkages and economic multiplication is based on local skill level. Therefore, it would be beneficial for the Peruvian government to assess the local needs that will be met, create policies to reinforce buying local throughout the companies supply chain, to the best of their ability, and putting training programs in place to ensure that the capacity exists to support the company's needs. This can be done through coordination and split-funding between the government and the operating company.

Mining Vision 2030 aspires for upstream linkages for the mining sector. Sections three and six are directly related potential upstream lithium benefits. Section three refers to the mining sector as "interlinked" with other economic sectors.[436] Section six elaborates on the economic benefit from section three. Specifically, it seeks to boost other industries operating around the mining areas. It also mentions the possibility of utilizing infrastructure by both the mining company and by others in the area, as mentioned above with the shared-using agreements.[437] It promote boosting Peru's human capital, which refers to providing increased training to local workers to create a more skilled workforce. Finally, it calls on the national, regional and local governments to come together to achieve these goals.[438] Clearly, Mining Vision 2030 has a clear aspiration for upstream benefits. It knows that mining generally can serve as an economic multiplier and seeks to varied benefit Peru.

RECOMMENDATIONS:
Create a legal framework to allow for "shared-use" access to mining-related infrastructure
Promoting and implementing these "shared-use" agreements will allow all stakeholders to benefit from mining infrastructure. Moreover, the government should encourage mining companies to consult with utility providers (water, power and telecommunications) to explore

[432] Balza, Lenin H, Sabina Blanco Vecchi, Virginia Snyder, Adriana Unzueta and Martin Walter, "The time is now, tomorrow will be too late! Lithium, Li-ion batteries and the energy transition." Inter-American Development Bank Blog: Para El Energia Futuro (Nov. 30, 2020). https://blogs.iadb.org/energia/en/the-time-is-now-tomorrow-will-be-too-late-lithium-li-ion-batteries-and-the-energy-transition/; Columbia Center on Sustainable Investment, Linkages to the Resource Sector: The Role of Companies, Government and International Development Cooperation (Eschborn: Deutsche Gesellschaft für Iternationale Zusammenarbeit (GIZ) GmbH, 2016), 9.
[434] ," The Open University, "Rising China and Africa's Development: Oil: 2.2 Types of Linkages", accessed May 7, 2022, https://www.open.edu/openlearn/mod/oucontent/view.php?id=85960&section=2.2.
[435] Columbia Center on Sustainable Investment, Linkages to the Resource Sector: The Role of Companies, Government and International Development Cooperation (Eschborn: Deutsche Gesellschaft für Iternationale Zusammenarbeit (GIZ) GmbH, 2016), 9.
[436] Grupo Vision Mineria 2030,. "Vision a la Mineria en el Peru al 2030," Ministerio de Energia y Minas, January 2019.
[437] Ibid.
[438] Ibid.

potential synergies with mining–related infrastructure consistent with Mining Vision 2030's mandate that "the Project Company should not substitute the State for building, operating and maintaining infrastructure."
Enter into regional international agreements touching on the lithium value chain
Economic advisors suggest entering into regional international agreements that allow developing nations to work together in a global value chain to maximize their benefit from mineral extraction.[439] For example, Peru, Chile, and Bolivia could work in coordination to leverage a shared-use agreement around roads, rails, and ports to facilitate the transportation of Bolivia's lithium to the coastal region for export.[440]
Create policies to promote "consumption linkages" and "upstream linkages"
"Consumption linkages" arise when the accumulation of personal incomes derived from resource extraction leads to an increase in demand for products from other sectors in the local economy, while "upstream linkages" occur when the corporations transfer knowledge and technology to domestic suppliers. The Peruvian government and mining companies should jointly assess the local needs that will be met, create policies to reinforce buying local throughout the companies supply chain, to the best of their ability, and putting training programs in place to ensure that the capacity exists to support the company's needs. This can be done through coordination and split-funding between the government and the operating company.
Develop a local content policy
A local content law/policy is one that requires firms to use domestically manufactured goods or domestically supplied services to operate in an economy.[441] To ensure that mining companies comply with its local content commitments the government should set detailed and regular reporting requirements and define a clear process for approval. The local content policy should also recognize that the realization of upstream linkages anchored on these local content targets is a shared responsibility between the public and private sector. Thus, the government should identify what investments are necessary to complement, facilitate, and maximize the private sector's intervention. The local content policy should also be forward looking and take into account the technological changes that the mining company is undergoing.[442]
Support research projects with universities with the aim of specializing and improving the technology suited for the geology of Peru
Apart from potentially creating an environment that may lead to technological innovation, which in turn may reduce costs to mining companies, such projects have the potential to create knowledge spillovers and enhance the comparative advantage of the country.[443]

V. JUMPSTARTING THE LOCAL LITHIUM INDUSTRY

[439] P. Toledano, "Global Value Chains and Resource Corridors: The Nexus is Regional Integration", Columbia Center for Sustainable Investment, (Dec. 2015), https://ccsi.columbia.edu/sites/default/files/content/docs/our%20focus/extractive%20industries/Great-Insights-Global-value-chains-and-resource-corridors-Dec-2015-Jan-2016_0.pdf.
[440] Ibid. ("If the shortest route to the sea is across a national border, those companies are likely to favour such a route to avoid the additional capital expenditure that would be required to reach a port within the country's borders.").
[441] OECD, "Local Contect Requirements Impact the Global Economy", Local Content Requirements (accesed May 9, 2022) https://www.oecd.org/trade/topics/local-content-requirements/.
[442] Ibid. at 82
[443] Ibid.

Within the mining sector, the possibility of bringing downstream benefits can be appealing and will likely occur under certain conditions. "Downstream linkages or benefits" refer to the additional processing, improving or adding value to a certain commodity. It can also include indirect externalities as well, like the creation of employment opportunities.[444] According to one extractive industries analyst, downstream processing should occur if the following conditions are met: 1) the country has an advantage, like geography, that would allow it to succeed in additional processing (not including having reserves of the natural resource); 2) the private sector should be a principal investor and owner of the venture to enhance efficiency; and 3) the processing should be competitive without the use of subsidies.[445] While this only represents the view of one expert, it is worth considering these requirements. Essentially, it is recommended that a company should prioritize downstream processing if the private sector can effectively succeed in this space due to competitive advantages and good market conditions. The process of expanding to downstream production should not be forced. Instead, downstream production should occur if there are clear economic incentives driving the decision.

To facilitate downstream production, governments can provide incentives or mandate regulations. Some options to provide incentives to the private sector refer to government investment and policymaking. Specifically, the government can create stable macroeconomic conditions to allow for a good investment grade, which opens the door for foreign direct investment. In addition, governments can enact policies to promote small and medium enterprises and invest in infrastructure projects like ports, airports and technological advancements.[446] These examples would make it more desirable for a private firm to invest in and develop new downstream industries.

Instead of providing beneficial investment climates, governments can take stronger stances to mandate downstream processing. The first method to achieve this is to tax unprocessed minerals. This would disincentivize the export of materials that are not further processed in-country. The second option is to completely ban the export of non-processed materials, thus forcing firms to engage in downstream processing if they wish to continue their operations.[447] Taxing unprocessed materials is not guaranteed to lead to downstream processing, considering the necessity for skilled labor and capital investment to create another industry. For example, the cost of a converter plant (for lithium) requires around the same amount of investment as developing a lithium mine.[448] This all depends on the severity of the tax. If it is too low, companies will likely continue exporting unprocessed materials at a higher cost. If it is too high, they would consider exiting the market. The tax must be high enough to motivate the companies to invest in downstream activities. Other factors, like mine life, are relevant here to determine a company's long-term investment strategy. Government regulation that bans exporting unprocessed materials demonstrates the government's eagerness to guarantee downstream processing. Forcing firms to engage in downstream production presents a risk,

[444] Columbia Center on Sustainable Investment, Linkages to the Resource Sector: The Role of Companies, Government and International Development Cooperation (Eschborn: Deutsche Gesellschaft für Iternationale Zusammenarbeit (GIZ) GmbH, 2016), 33.
[445] James Bond, "Downstream processing in developing countries: Opportunity or mirage?," Columbia FDI Perspectives, no. 104, (September 2013): 2, https://doi.org/10.7916/D8RB7D1C .
[446] Ibid.
[447] Columbia Center on Sustainable Investment, Linkages to the Resource Sector: The Role of Companies, Government and International Development Cooperation (Eschborn: Deutsche Gesellschaft für Iternationale Zusammenarbeit (GIZ) GmbH, 2016), 41.
[448] Tess Ingram, "Why West Australian lithium miners are exploring downstream processing," Australian Financial Review, July 31, 2019, https://www.afr.com/companies/mining/why-west-australian-lithium-miners-are-exploring-downstream-processing-20170721-gxfnqn.

since it forces firms to invest in the country and produce processing facilities. It also hurts the government as it will temporarily lose revenue streams, as the firms cease exporting in the short to medium term while they create the required manufacturing plants. If firms decide not to engage in downstream processing at all, the government will have to reconsider this strategy. In 2014, Indonesia banned exports of unprocessed materials so firms would have to engage in downstream processing within the country. In the medium term, export earnings fell by USD4.9 billion and government revenue decreased by USD820 million in 2014. However, 25 companies did begin to create processing facilities, representing a USD6 billion investment.[449] Although the Indonesian government took a risk by passing this law, it appears that the government strategy was successful. Although the government's coffers and the economy would suffer in the medium term, the expectation is they would both rebound very strongly in the long term. Government influence in creating downstream processing can be successful, but there is no guarantee that it will achieve this goal.

Mandating downstream lithium production in Peru will be a challenge considering the mining concession does not regulate the commercialization of the commodity.[450] This means that once the product is exploited, the mining firm is not obligated to process the mineral due obligations specified in the concession. In essence, the firm can domestically process the product to the degree it wants. If Peru were to mandate any form of downstream processing, it would need to amend or create new regulation.

In any situation, a cost benefit analysis is needed to determine how a government should encourage downstream processing, if at all.[451] Downstream processing can lead to increased GDP, increased foreign investment and government revenue, greater employment and a more advanced technological sector.[452] While these benefits are positive, the government must carefully consider if and how to proceed.

Within the lithium space, downstream processing often refers to the multi-step lithium-ion battery production process. The first step is to extract the lithium from the earth and convert it to concentrate. Next, the concentrate is processed into a chemical form that can be used for batteries, like lithium carbonate or lithium oxide. It is worth noting that the first two steps can occur at the same location by a single company. Then, with the addition of other metals, the lithium chemical compound is converted to cathode powder. The fourth step involves using the cathode power and other materials to create battery cells. The fifth step is using the battery cells to create a battery pack, which can be used in an electric vehicle. The final stage involves selling the finished product, which in this case is the electric vehicle.[453] As of 2020, Chile and Argentina are in stages one and two of this process. These countries extract and concentrate the lithium and convert it to the chemical compound. Both countries seek to engage in the next step in this process, which would be cathode manufacturing. China, on the other hand, engages in all six

[449] Columbia Center on Sustainable Investment, Linkages to the Resource Sector: The Role of Companies, Government and International Development Cooperation (Eschborn: Deutsche Gesellschaft für Iternationale Zusammenarbeit (GIZ) GmbH, 2016), 39.
[450] Interview with Karin Acosta Pablo (interview with author) March 2, 2022.
[451] Columbia Center on Sustainable Investment, Linkages to the Resource Sector: The Role of Companies, Government and International Development Cooperation (Eschborn: Deutsche Gesellschaft für Iternationale Zusammenarbeit (GIZ) GmbH, 2016), 41.
[452] Ibid. 36.
[453] Alex Grant, Emily Hersh, and Chris Berry, "So, You Want to Make Batteries Too? A Framework for Developing Lithium-Ion Battery Supply Chain Industrial Strategy," Payne Institute Commentary Series: Viewpoint, (June 2020), 6-7, https://payneinstitute.mines.edu/wp-content/uploads/sites/149/2020/07/Payne-Commentary-Series-So-You-Want-to-Make-Batteries-Too.pdf.

steps of this process.[454] Different countries engage in the various phases of the downstream process of creating lithium-ion batteries.

There are both direct and indirect benefits of downstream lithium processing. The direct benefits are fairly intuitive. As the lithium is further processed, its price increases. Firms have been successful in extracting and concentrating lithium, as they can easily sell the concentrate to firms, including those in China. However, the prices of lithium carbonate and lithium hydroxide are higher than the price of concentrate. So, firms can financially benefit from downstream processing.[455] Grant and his coauthors segment the indirect benefits into primary, second and tertiary sections. Primary benefits include an increase in jobs, taxes and royalties. It also will bring economic growth to the country. Secondary benefits are the creation of intellectual property and a more skilled workforce. Finally, tertiary benefits are less concrete. They involve international, cultural connections, geopolitical influence, increased patriotism and benefits to other technical sectors.[456] Downstream processing for lithium can be profitable and beneficial to the country where the processing occurs.

Although downstream processing of lithium has its benefits, realizing the necessary steps involved are technologically challenging and require significant investment. Grant et al. argue that having a lithium deposit does not guarantee that downstream processing is possible.[457] As previously stated, the amount of money needed to invest in a lithium mine is about the same as investing in a converter plant where the lithium is transformed from concentrate to a chemical form.[458] In addition to the cost, technological experience and access to supply chains are needed. Bolivia, for example, through its national lithium production company, YLB, seeks to execute the full Li-ion battery downstream process. Thus far, it has been unsuccessful in each phase. A principal reason for this is that it lacks the skilled labor necessary to participate in this process. It also does not have the necessary infrastructure or access to additional minerals and elements that are needed to produce lithium-ion batteries.[459] Out of the 15 countries that Grant et al. identified as participating in the lithium-ion supply chain, only China can undertake all six steps of the process.[460] Though there is immense benefit, downstream processing is extremely difficult and requires significant capital, expertise and infrastructure.

Downstream processing of lithium is not impossible and can occur under the right conditions. The first step in this process is solidifying the extraction and concentration processes. This is especially important in countries that do not currently possess the necessary infrastructure and technical skills to process the lithium further. Grant et al. recommend that a firm only proceed from one stage in processing to another after operating at that stage for at

[454] Ibid. 6.
[455] Tess Ingram, "Why West Australian lithium miners are exploring downstream processing," Australian Financial Review, July 31, 2019, https://www.afr.com/companies/mining/why-west-australian-lithium-miners-are-exploring-downstream-processing-20170721-gxfnqn.
[456] Alex Grant, Emily Hersh, and Chris Berry, "So, You Want to Make Batteries Too? A Framework for Developing Lithium-Ion Battery Supply Chain Industrial Strategy," Payne Institute Commentary Series: Viewpoint, (June 2020), 7, https://payneinstitute.mines.edu/wp-content/uploads/sites/149/2020/07/Payne-Commentary-Series-So-You-Want-to-Make-Batteries-Too.pdf.
[457] Ibid.
[458] Tess Ingram, "Why West Australian lithium miners are exploring downstream processing," Australian Financial Review, July 31, 2019, https://www.afr.com/companies/mining/why-west-australian-lithium-miners-are-exploring-downstream-processing-20170721-gxfnqn.
[459] Alex Grant, Emily Hersh, and Chris Berry, "So, You Want to Make Batteries Too? A Framework for Developing Lithium-Ion Battery Supply Chain Industrial Strategy," Payne Institute Commentary Series: Viewpoint, (June 2020), 12, https://payneinstitute.mines.edu/wp-content/uploads/sites/149/2020/07/Payne-Commentary-Series-So-You-Want-to-Make-Batteries-Too.pdf.
[460] Ibid. at 6.

least two years, if not more.[461] If a firm is able to produce the lithium concentrate, then it can move downstream and begin producing the lithium chemicals. They believe that a firm should not produce any additional downstream products unless the country of operation has an electric vehicle market.[462] For Chile, Grant et al. recommends the country continue producing the lithium chemical formula, but to not expand further downstream, likely due to the lack of an electric vehicle market. They do recommend that Chile adhere to good environmental practices and implement new technology to maintain a strong market position in the lithium-ion battery supply chain.[463] Chile's example can serve as a model for Peru, as Chile already extracts the lithium and converts it from a concentrate to chemical form. Chile appears to be following this advice. Besides its domestic production, SQM, Chile's lithium manufacturing firm, is engaging in a joint venture with the Australian firm, Wesfarmers, to create a lithium hydroxide refinery in Australia, which will be completed in 2024.[464] Instead of continuing downstream production, Chile is expanding its current ability to produce lithium chemicals. A final option for downstream processing is engaging with regional partners to undertake different steps in the battery manufacturing process. Due to the complexity of this process, it will be very difficult for a single firm or country to complete all of the steps required. Different countries and firms can specialize in the necessary phases of this process.[465] While every country and market are different, these considerations will likely bring success for lithium producers.

Mining Vision 2030 mentions the importance of high value technology creation within the mining sector. A subsection of section three of Mining Vision 2030 discusses the importance of creating linkages with other economic sectors and creating products with high technological value.[466] While it is important to not engage in downstream lithium processing prematurely, Mining Vision 2030 does outline the aspiration of high value mining production. As previously stated, as the mining product is further processed, the value of the product increases. If additional production can occur in Peru, this will serve as an economic multiplier for the country and further benefit the economic and its citizens. Mining Vision 2030 aims to use Peru's mining sector to provide maximum benefit to the country. As such, the prospect of processing mining products to a high value good would serve to economically benefit Peru and its development.

RECOMMENDATIONS:
Establish extraction and concentration processes prior to downstream processing
Peru should focus on the initial steps of successfully extracting lithium from the earth and concentrating lithium for further processing, before pursuing any additional step in the lithium supply chain. Since the extraction and concentration processes are complex and lucrative, downstream processing should not occur before two to five years of initial extraction and concentration.

[461] Ibid. at 15.
[462] Ibid.
[463] Ibid. at 16.
[464] Anguns Macmillan, "Australia's downstream lithium sector takes shape," Argus Media, February 24, 2021, https://www.argusmedia.com/en/news/2189935-australias-downstream-lithium-sector-takes-shape.
[465] Alex Grant, Emily Hersh, and Chris Berry, "So, You Want to Make Batteries Too? A Framework for Developing Lithium-Ion Battery Supply Chain Industrial Strategy," Payne Institute Commentary Series: Viewpoint, (June 2020), 13-14, https://payneinstitute.mines.edu/wp-content/uploads/sites/149/2020/07/Payne-Commentary-Series-So-You-Want-to-Make-Batteries-Too.pdf.
[466] Grupo Vision Mineria 2030,. "Vision a la Mineria en el Peru al 2030," Ministerio de Energia y Minas, January 2019.

Consider a regional downstream production agreement
Since Chile and Argentina already extract, concentrate and chemically process the lithium, Peru can sell its concentrated lithium to these countries through a trade agreement that would be mutually beneficial to these countries and assist with the economic development of the region. Please refer to *Appendix B* for a proposed regional agreement.

CONCLUSION

THE GOVERNMENT OF PERU has asked this Columbia Capstone Team to craft political and legal frameworks to ensure that the exploration and mining of lithium is both environmentally and socially sustainable. Additionally, this Columbia Capstone team explored the ways in which lithium can be an economic multiplier for the people of Peru.

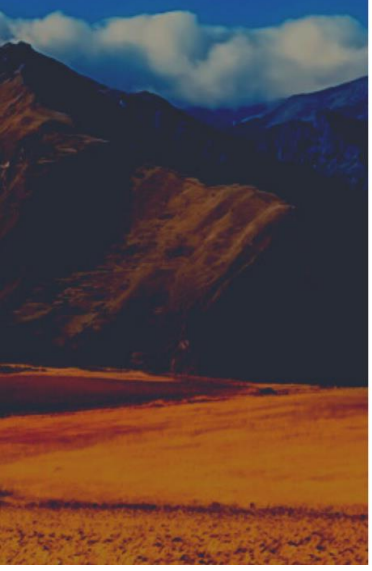
The report examines three important considerations for mining lithium in Peru: 1) the environmental impact of hard rock lithium mining; 2) socio-political considerations of hard rock lithium mining; and 3) lithium as an economic multiplier. The team assessed current and global laws related to lithium mining, how they interact with Peru's current policy in Mining Vision 2030, and how Peru can cooperate with its regional neighbors, who are some of the most prominent lithium producers globally. The Columbia Capstone team interviewed experts in the fields of mining, geology, and legal frameworks for development. The team was fortunate enough to collaborate with many officials from Peru's government, including numerous officials from the Ministry of Energy and Mines (MINEM).

Based on extensive research, this Columbia Capstone team has concluded that enhanced research and development is paramount to ensuring the success of lithium mining in Peru. Environmental risks present themselves not only as a threat to the great natural resources and beauty of Peru, but to the communities who live close to mining sites. The presence of uranium in the hard rock mining process is a health and safety threat that should be heavily researched and evaluated before lithium mining continues to ensure that it negative impacts or costs do not outweigh the benefits. More specifically, this Columbia Capstone team believes that it would be in Peru's best interest to prohibit continuance of the Falchani project until specific research has been officially reported about, and accordingly evaluated: 1) how the company plans to protect the local environment from lithium and uranium contamination and extensive

water usage; 2) how the company and the government of Peru plan to work together to ensure community needs are being met; and 3) how the company can contribute to the economic growth of Peru. These findings can be expounded upon in forthcoming Columbia Capstone reports.

This Columbia Capstone team believes in the global importance of lithium mining, and hopes to see Peru as a leader in the sustainable transition toward renewable energy. The team recommends that Peru does this in a way that is environmentally, socially, and economically sound.

THE TEAM



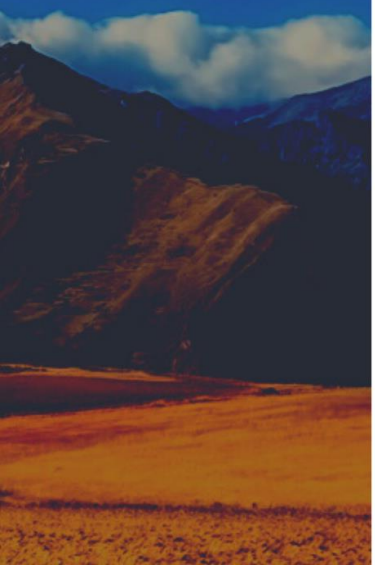
SAMANTHA DAISY

Samantha is a second-year law student at Columbia Law School. She received her Bachelor in Social Work from Stony Brook University in 2016. In 2017, Samantha moved to Guyana, South America, where she worked as a Community Health Promotion Volunteer for the U.S. Peace Corps. Samantha worked on several health and environment focused community projects throughout her time in Guyana, including assessing the impact of growing off-shore oil extraction on the community where she lived. Samantha continued this work at the local and national level for three years before returning to the U.S. due to the national COVID evacuation. She hopes to continue to work in energy and environmental law.

COURTNEY MANNING

Courtney is a second-year Master of International Affairs candidate specializing in International Security Policy and International Conflict Resolution at Columbia's School of International and Public Affairs (SIPA). She also currently serves as the program coordinator for the Saltzman Institute of War and Peace Studies. Before attending SIPA, she conducted research in Bolivia and Peru, and worked with NGOs centering on the intersection of globalization and women, LGBT, and indigenous rights. Her first paper, "Intersecciones en la Descolonizaci n y la Teor a LGBT en los Andes", was published in 2017. Courtney is at SIPA to pivot to a career in negotiation and conflict resolution."

THE TEAM



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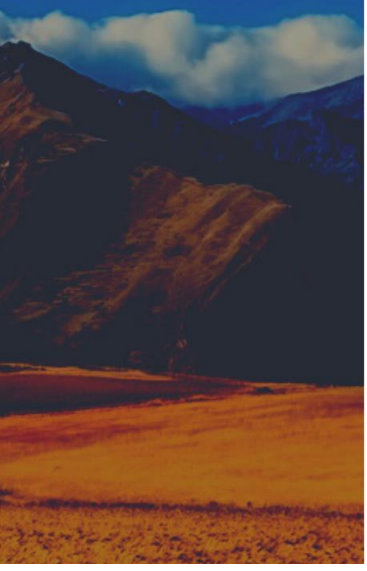
Roxie is a Master of Laws candidate at Columbia Law School. She is licensed to practice law in the Philippines. Her areas of practice include appellate litigation (civil, criminal and administrative) and arbitration. Before joining Columbia, Roxie was an Associate Solicitor at the Office of the Solicitor General of the Philippines where she represented the Republic of the Philippines, its government agencies, and officials in criminal and civil actions, and advised them in their policy formulation, interpretation, and implementation. She also handled antitrust enforcement and investment arbitration cases. Prior to government service, Roxie was a corporate associate at SyCip Salazar Hernandez & Gatmaitan, where she handled mergers and acquisitions, and transactional work. Roxie obtained her Bachelor of Science and majored in Legal Management and Juris Doctor from Ateneo de Manila University (Philippines) where she graduated with honors.

ANNA NORMAN

Anna is a law student at Columbia Law School. She has a particular interest and background in the fields of human rights and international law. Most recently she has worked with the American Bar Association's Center for Human Rights on their Justice Defenders program, as well as with the NGO Victim Advocates' International. In these positions she was responsible for legal research, brainstorming advocacy strategies, working with victims and victim groups, organizing evidence, and aiding in report writing. Before law school Anna worked at a non-profit providing immigration services to her community.

THE TEAM



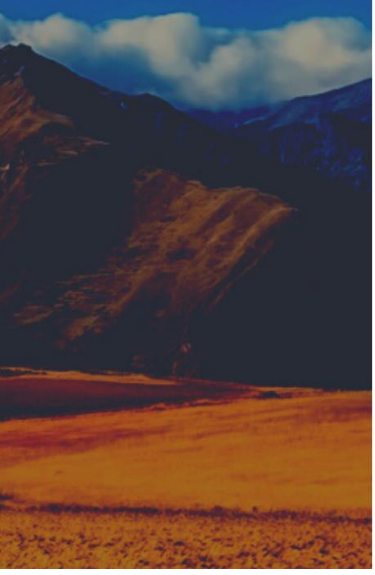
CASSIDY PEARSON

Cassidy is a Master of Public Affairs candidate specializing in Energy and Environmental Policy at Columbia's School of International and Public Affairs. After graduating from the University of Utah with degrees in chemistry and biology, Cassidy spent two years working in Central Mexico as an Environmental Education Specialist with the U.S. Peace Corps. Cassidy continued to work in global environmental policy at the Climate Reality Project, where she supported a training of over 4,000 Latin American activists, leaders, and students. She currently works at the Brookings Institution, where she researches the intersection of urbanization and the climate crisis. She is excited to apply these experiences to creating equitable environmental policy.

LUIS ALFONSO SEÑA

Luis Alfonso S. Seña ("Lans") is a student at the Columbia Law School pursuing a Master of Laws degree. Prior to attending Columbia, Lans was an associate attorney for several years at Romulo Mabanta Buenaventura Sayoc & de los Angeles, one of the largest law firms in the Philippines, practicing corporate law with a focus on mergers and acquisitions, capital markets, and antitrust. Lans also has experience in human rights work, having been a legal intern at the Ateneo Human Rights Center, where he assisted in organizing projects aimed at promoting the community development of various indigenous communities.

THE TEAM



JOSEPH WEIMAN

Joseph is a political analyst focusing on Latin America. He has recently worked at Control Risks and Colombia Risk Analysis. In these positions he researched and analyzed political, economic and social risks for government and private sector clients. Some of his recent projects focused on the energy sector, infrastructure projects, elections and regulatory changes. In addition, he is pursuing a Master of International Affairs at Columbia's School of International and Public Affairs (SIPA). At SIPA, he studies economic and political development in Latin America. Prior to SIPA, he represented asylum seekers in New York. He is from New York City and is fluent in Spanish.

Jenik Radon is an Adjunct Professor at the School of International and Public Affairs (SIPA) at Columbia University, where he teaches sustainable natural resource development with a focus on risk and strategic management, sovereignty and human rights, especially environment and social license. Radon has also taught at Monterrey Tech, Queretaro, Mexico and at Externado University in Bogota, Colombia, focusing on the extractive sector. Radonparticipated in the constitutional peace process of Nepal and served as a drafter of the interim (2006) peace constitution. Serving as an advisor during Estonia's independence struggle, Professor Radon co-authored the country's foreign investment, mortgage/pledge, privatization and corporate laws and was an architect of Estonia's privatization. He was awarded the Medal of Distinction of the Estonian Chamber of Commerce and Estonia's Order of the Cross Terra Mariana, which was personally presented by the President of Estonia. Professor Radon served as Georgia's key foreign advisor/negotiator of the oil and gas pipelines from Azerbaijan to Georgia to Turkey and was awarded Georgia's highest civilian award, the Order of Honor. Radon presently advises public authorities and civil society in emerging nations around the world, including Estonia, Nepal and Namibia. His expertise is the negotiation of extractive industry agreements on behalf of the public sector, especially mining and oil and gas development contracts, as well as the drafting of the necessary legislation. He has authored "Walk Tall!, A Beautiful Tomorrow For Emerging Nations, An Anthology of Inclusive Principles For National Growth and Prosperity: Equity, Rule of Law and Sustainable Natural Resource Development," which was published in conjunction with the 2018 APEC conference in Papua New Guinea and has written numerous articles and reports on transparency, goverenance and natural resource development, including: "How To Negotiate Your Oil Agreement," in Escaping the Resource Curse, ed. Macartan Humphreys, Jeffrey Sachs, and Joseph Stiglitz. Professor Radon has supervised the Peru Capstones at SIPA-Columbia for the last eight years and has also lectured widely in Peru and has presented on natural resource development in Peru to Ceplan, Acuerdo Nacional and Universdad Peruana de Ciencias Aplicada (UPC), among other Peruvian institutions.

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APPENDIX

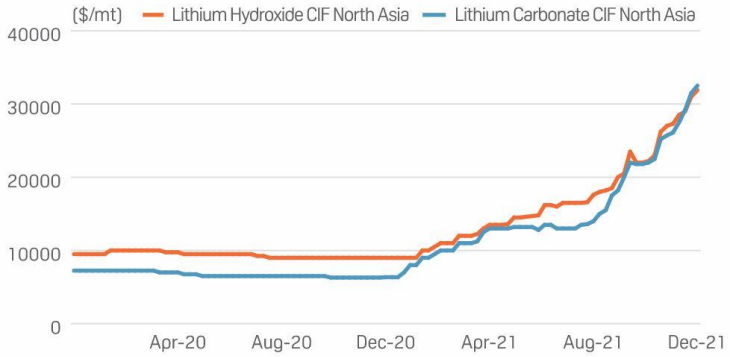
APPENDIX A: LITHIUM EXTRACTION METHODS

Lithium is extracted in brine or rock form. Different extraction methods produce different concentrations of lithium in the final product. The rocks are crushed and then dense media separation (where particles are separated based on their weight) or flotation[467] are used to produce a concentrate.[468] The concentrate contains a compound that contains lithium, usually spodumene. Spodumene concentrate is the final product produced by the mine. It is then sold to processing plants that can convert this material into either lithium carbonate or lithium hydroxide. [469]

Peru has significant advantages over Chile and Bolivia because of its hard rock lithium reserves. Hard rock lithium mining can produce either lithium hydroxide or lithium carbonate, whereas brine extraction typically produces lithium carbonate only. Lithium hydroxide has a higher nickel content, better power density and is safer compared to lithium carbonate.[470] These advantages give it a longer lifespan within electric vehicles.[471] Spodumene rock also has a higher lithium concentration than can be derived through brine extraction. The hard rock mining process is shorter and cheaper than evaporating brine since it uses low cost, traditional mining processes.[472] According to S&P Global, hard rock mining companies had cash costs that were half as high as brine mining companies on average in 2019.[473] This gives Peru an enormous advantage in the race to mine lithium as prices for lithium carbonate and lithium hydroxide are nearly the same for half the amount of cost and effort.

[467] S&P Global Market Intelligence, "Essential Insights: Lithium Costs & Margins: (last accessed May 9, 2022) https://pages.marketintelligence.spglobal.com/Lithium-brine-vs-hard-rock-demo-confirmation-MJ-ad.html#:~:text=Lithium%20carbonate%20can%20then%20be,flotation%20to%20produce%20a%20concentrate.
[468] C. Marion, et. al., "The Potential for Dense Medium Separation of Mineral Fines Using a Laboratory Falcon Concentrator", 105 Mineral Engineering at 7-9, (May 2017), https://www.sciencedirect.com/science/article/pii/S0892687516304174#:~:text=Dense%20medium%20separation%20(DMS)%20is%20a%20process%20by%20which%20particles,in%20specific%20gravity%20(SG).&text=To%20improve%20the%20separation%20efficiency%20of%20finer%20particles%2C%20centrifugal%20separators,migration%20through%20the%20dense%20medium.
[469] S&P Global Market Intelligence, "Essential Insights: Lithium Costs & Margins: (last accessed May 9, 2022) https://pages.marketintelligence.spglobal.com/Lithium-brine-vs-hard-rock-demo-confirmation-MJ-ad.html#:~:text=Lithium%20carbonate%20can%20then%20be,flotation%20to%20produce%20a%20concentrate.
[470] European BAttery Alliance, "Lithium from Geothermal Brines: A Less Conventional Lithium Resource with Additional Benefits", InnoEnergy (Oct. 27, 2021), https://www.eba250.com/lithium-from-geothermal-brines-a-less-conventional-lithium-resource-with-additional-benefits/?cn-reloaded=1.
[471] Ibid.
[472] "Lithium Supply – Hard Rock vs. Brine", New Age Metals, Inc. (Oct. 3, 2019), https://newagemetals.com/lithium-supply-hard-rock-vs-brine/.
[473] S&P Global Market Intelligence, "Essential Insights: Lithium Costs & Margins: (last accessed May 9, 2022) https://pages.marketintelligence.spglobal.com/Lithium-brine-vs-hard-rock-demo-confirmation-MJ-ad.html#:~:text=Lithium%20carbonate%20can%20then%20be,flotation%20to%20produce%20a%20concentrate.

SEABORNE LITHIUM PRICES 2020-2021



Source: S&P Global Platts

APPENDIX B: PROPOSED SOUTH AMERICAN AGREEMENT ON SUSTAINABLE LITHIUM DEVELOPMENT

(NOTE: This is a working conceptual draft and for further elaboration)

Preamble

The global scientific consensus on the human driven warming of the planet, and the resulting climate changes resulting in increased frequency of severe weather events, decreased biodiversity, rising sea levels, and other consequences that have dangerous consequences to human life, have resulted in a global effort to decarbonize industrial society. A necessary step in the decarbonization movement is the goal of electrifying vehicles and the improvement of batteries for renewable energy storage. To reach these goals exploitation of lithium will need to drastically increase. Given the impending risk to the safe future of humanity that climate change poses, and the global increase in demand of lithium to prevent the worst of this risk, the Countries of Peru, Bolivia, Chile, and Argentina, the parties to this agreement [hereinafter, Parties], aware of their large natural deposits of lithium, will coordinate to meet this increased demand in an environmental and socially sustainable way.

The Agreement

Article 1

In meeting the obligations outlined in this agreement the Parties agree to uphold all previous international and regional legal obligations.

Article 2

The Parties shall meet every three (3) years to discuss the terms of this agreement, with amendments requiring agreement by all parties.

Article 3

The Parties shall establish a secretariat to organize the ratification, dissemination, amendment, all other organizational requirements of the agreement.

Article 4

The Parties shall establish a treaty body to release a report once a year on the status of the implementation of the treaty, as well as recommendations to better implement the treaty.

1. The treaty body shall consist of one elected person from each state party to the agreement, appearing in their individual capacity, and not as a representative of their home state.
2. The elected persons shall be experts in the areas of mining, environment protection, or human rights.
3. The recommendations shall require a quorum of 3/4 of the parties to enact a requirement.

Trans-boundary Environmental Effects

Article 5

In the next one year the Parties agree to:

1. Establish an information sharing framework on the usage of water in lithium extraction, with the goal of developing best practice to protect water resources required by migratory species, including the Flamingo.
2. Establish in their respective legal frameworks a civil liability scheme, allowing nuisance claims for environmental harms caused by lithium mining occurring in any of the jurisdictions party to this agreement.
3. Establish in their respective regulatory frameworks, a government funded body of experts to research and report on the effects of lithium mining on the environment.

Human Rights

Article 6
The parties agree to require community acceptance agreements before all lithium mining. For those projects that have begun before this treaty, parties must begin working to draft such an agreement. [Note: See *Appendix C* for an example of a community acceptance agreement.]

Article 7
The Parties agree to require human rights due diligence, in compliance with the recommendations outlined in the United Nations Guiding Principles on Business and Human Rights for all companies mining lithium in their jurisdiction.

Article 8
The Parties shall ensure access to education.

Development of Lithium

Article 9
The Parties shall agree to set a standard royalty schedule to be levied on all lithium mining ventures.

Article 10
The Parties shall agree to create community development funds for all locations in which mining occurs.

Article 11
The Parties shall agree to require in concession agreements a hiring scheme that allows certain percentages of new jobs created by mining operations to be filled by the local population.

Article 12
The Parties shall agree to work with mining companies in creating education and training so that local people can secure jobs at various levels of the mining operation.

Article 13

The Parties shall agree to create a body of experts to advise the Parties on the eventual downstream development of lithium, providing a detailed report with recommendations before each meeting of the parties.

APPENDIX C: COMMUNITY DEVELOPMENT MODEL REGULATION

Commented [JR1]: Call me if this is a new draft and not from a prior capstone

(NOTE: This draft regulation is patterned after the World Bank Group Community Development Agreement Model Regulations & Example Guidelines Report and has been adapted to the development and regulatory requirements of the Peruvian government. Matters in red are modifiable language and comments.) This complements the Community Partnership Agreement (See *Appendix G*) proposed in the 2020 Capstone.

Article 1 — Citation

This regulation shall be known as the [Mining Community Development Agreement Regulation] 20[xx].

Comment: These the content of this regulation can be modified as amendments to the General Mining Law or as mining guidelines.

Article 2 — Declaration of Policy

All mineral resources are vested in the government of Peru. It is the responsibility of the Peruvian government to promote their rational exploration, development, utilization, and conservation through the combined efforts of government and the private sector to enhance national growth in a way that effectively safeguards the environment and protect the rights of affected communities.

Article 3 — Objectives

The object of these regulations are:

(1) to ensure the equitable share of communities impacted by mining operations from the benefits arising from the mining operations or activities of the holder;
(2) to enhance the continuing social, cultural and economic well-being of communities impacted by mining operations;
(3) to ensure accountability and transparency in mining related community development;
(4) to define when community development agreements are required and to provide a framework for such agreements.

Article 4 — Definitions

As used in and for purposes of this Regulation, the following terms, shall mean:

"Community Development Agreement" means a legal agreement entered into between the holder and the qualified community or communities and approved pursuant to these regulations;

"General mining regulations" means the existing mining regulations promulgated by the Ministerio de Energía y Minas;

"General Mining Law" means 1992 General Mining Law approved by Supreme Decree No. 014-92-EM.

"MINEM" means the Ministerio de Energía y Minas, the Ministry focused on the general regulation of mining activities and on setting public policies.

"mining right" means a mining concession to explore and exploit mineral resources granted by the Ministry of Energy and Mines.
Comment: The intent of this clause is to identify the type of mining concessions to which the CDA requirements will apply to. The MINEM shall decide and specify to which holders of concessions/mining permits the CDA requirement should apply. It is advisable to specify whether the requirement will apply even to holders of artisanal permit, small-scale mining license, mining lease, and other similar mining concessions. Any type of mining permit/concession that the regulation should apply to should be named here.

"mining right holder" means the holder of a valid and susbsisting mining concession under the General Mining Law;

"qualified community" means a community/ies located in the area of direct social influence of the mining project that has been specifically identified in an Environmental and Social Impact Assessment required under the National Environmental Impact Assessment Law, No. 27446 (2001) (as modified by Legislative Decree No. 1078, and its accompanying mining regulations as having the potential to be significantly negatively or positively impacted by mining operations.

Article 5 Applicability

A Community Development Agreement shall be required of the holder of a mining concession under the General Mining Law.

Article 6 Identification of Qualified Community

(1) Where the mining right holder is required to complete and submit an Environmental and Social Impact Assessment under the National Environmental Impact Assessment Law, and the assessment finds that communities may be significantly impacted by the mining operations, the holder is required to enter and implement a community development agreement with the communities mentioned in the assessment.

(2) If necessary, in addition to the communities listed in the environment impact assessment, the mining right holder must

identify all qualified communities and submit a draft list of qualified communities to the MINEM and the identified qualified communities –

(1) before commencing mine development (or where the mining right came into force before the publication date of these regulations and mine development has already commenced or has been completed, within one hundred and eighty (180) calendar days of such publication date), and

(2) at five (5)-year intervals after the year in which mining commences (or where the mining right came into force before the publication date of these regulations and mining commenced before such publication date, at five (5)-year intervals from the date on which mining commenced),

Comment: There is a need to constantly examine and update who constitutes a qualified community. The timing requirement considers that, often, the holder of a mining right is not the same entity as the party that held a prior exploration right.

(3) A community not identified by the mining right holder may submit a request to be included as a qualified community to the MINEM and the mining right holder that it believes it is a qualified community.

(4) The MINEM, in consultation with the National Service of Environmental Certification for Sustainable Investment (SENACE) and the relevant regional government, shall within sixty (60) calendar days of receiving a notice from the mining right holder or request from an applying community, whichever is later, shall issue an approved list of qualified communities, specifying the reasons for the approved list.

Article 7 General obligation to promote community development

The holder of a mining right shall assist in the development of communities affected by its operations to promote sustainable development, enhance the general welfare and the quality of life of the inhabitants, and shall recognize and respect the rights, customs, traditions and religion of local communities.

Article 8 Draft Community Development Agreement

(1) The draft of the Community Development Agreement shall be prepared by the representatives of the mining rights holder and the qualified community in accordance with this regulation.
(2) The Community Development Agreement shall be prepared in [Spanish].
(3) The drafting of the Community Development Agreement shall consider the unique circumstances of the mining operations and the qualified community, the issues to be addressed set out in Article xx hereof, and the community development program plan.
(4) The community development agreement shall address issues including but not be limited to:
    (a) role of the regional government;
    (b) educational scholarship, apprenticeship, technical training and employment opportunities for the members of the qualified community;
    (c) employment quota or percentage allocation for members of the qualified community;
    (d) financial or other forms of contributory support for infrastructure development and maintenance (e.g., education, health, roads, water, power)
    (e) assistance with creation, development, and support to small-scale and micro enterprises;
    (f) special programs that benefit women of the qualified community;
    (g) special programs that benefit the youth of the qualified community;
    (h) marketing of agricultural products, if applicable
    (i) protection of natural resources;
    (j) support for cultural heritage and sports;
    (k) treatment of cultural and sacred sites;
    (l) treatment of ecological systems, including restoration and enhancement, for traditional activities such as hunting and gathering;
    (m) language training to further employment prospects;
    (n) how cultural values will be respected;
    (o) cross-cultural training requirements;
    (p) malaria, AIDs and drug dependency prevention and intervention;
    (q) land access;
    (r) assumption of specified obligations of the mining right holder by the qualified community, sub-communities and/or government on an evolving basis and/or upon termination of the agreement;

(s) methods and procedures of environment and socio-economic management, and local governance enhancement;
(t) requirements with regard to third parties such as the mining right holder's contractors and suppliers;
(u) the involvement of non-governmental organizations; and
(v) other matters as may be agreed by the parties.

Comment: These items are at the option of the parties and can be modified by the MINEM as applicable. It was only included to provide a framework for negotiations between the mining right holder and the qualified community.

Article 9 Content of the Community Development Agreement

The community development agreement shall contain provisions including but not limited to the following:

(1) an explanation of the community development goals, objectives, obligations and activities aimed to achieve sustained development which—
  (a) lasts from generation to generation;
  (b) is based on the actual needs of the qualified community;
  (c) is well planned, monitored and evaluated;
  (d) has long term benefits;
  (e) prepares the community for closure of the mine;
  (f) compliments but does not replace government-led development and services provided or to be provided;
  (g) is in accord and compliments regional, provincial, and district government development plans;
  (i) recognizes and incorporates traditional knowledge.

(2) the person, persons, board, committee, foundation, trust, forum, body or other entity which shall manage the agreement;
(3) the person or body that represents the qualified community for the purposes of the agreement;
(4) A community development program plan which shall include at least the following:
  (a) objectives,
  (b) time-based milestones;
  (c) implementation timetable;
  (d) schedule of anticipated expenditures;
  (e) metrics and indicators by which to measure progress;
  (f) periodic reporting including actual expenditures;

(g) how the plan works in coordination with regional, provincial and local government plans, services, infrastructure and activities provided to or affecting the qualified community;
(h) how the provision of any service provided by the mining right holder to the community will be terminated or transferred to the community;
(i) how and when the plan will be periodically updated;
(j) how the plan and amendments to the plan will be ratified by the affected community; and
(k) such other content as may be mutually agreed by the affected mine community and the holder.

(5) The consultative and monitoring framework between the parties including but not limited to the means by which the community will participate in the planning, implementation, management, measurement (including indicators) and monitoring of activities carried out under the community development agreement;

(6) The means by which the members of the qualified community will participate in the community development agreement's decision-making processes;

(7) The means by which the interests of women, youth, and marginalized groups of the affected mine community will be represented in the community development agreement related decision-making processes;

(8) Roles and obligation of the mining right holder which may or may not be part of the community development program plan under Article 9(4) hereof, including but not limited to:
(a) undertakings with respect to the social and economic contributions that the mining project will make to the sustainability of the qualified community;
(b) (assistance in creating self-sustaining, income-generating activities, such as but not limited to, production of goods and services needed by the mine and the qualified community;
(c) consultation with the qualified community in the planning of mine closure and post- closure measures that seek to prepare the community for the eventual closure of the mining operations;

(9) Roles and obligation of the qualified community which may or may not be part of the community development program plan under Article 9(4) hereof, including but not limited to:
(a) undertakings to ensure community participation throughout the life of the community development agreement aimed at optimizing its implementation;

(b) establishment of a grievance and information exchange mechanism within the community to monitor impacts of community development agreement implementation on the community and to identify aspects that may require modification.

(10) Roles and obligations of the [regional or district government];

(11) How any funds made available under the agreement are to be disbursed, for what purposes they may be disbursed, what accounts must be kept and by whom, and reporting and auditing requirements;

(12) Grievance and dispute resolution machinery between the mining right holder and the qualified community, including but not limited to:

(a) Mechanisms through which either party may lodge a grievance with the other;

(b) A written and signed statement that will be included in the community development agreement confirming that the mining right holder and qualified community agree that any dispute regarding the agreement shall in the first instance be resolved by consultation between the holder and the qualified community representatives;

(c) The dispute resolution mechanism to be used when consultation between the holder and the affected mine community representative fails.

(13) The process by which the agreement may be modified;

(14) Severability of articles;

(15) The applicable law of the community development agreement shall be the laws of Peru;

(16) Reasons and procedure for declaring force majeure;

(17) Duration of the agreement;

(18) Suspension / termination of the agreement;

(19) Assignment of the agreement or any right or obligation thereunder;

(20) Transfer of all community development agreement rights and obligations to any party to whom the mining right holder transfers its mining right;

(21) How notifications to respective parties shall be done;

(22) Location where the agreement may be accessed by members of the community; and

(23) Authorized signatories of the agreement. For the qualified community, this may be the representatives of the community, community members or any combination thereof, non-governmental organizations, and others as the need requires.

Article 10 Exclusions from Community Development Agreement

A community development agreement may not address any of the following matters –

(1) the imposition of any additional rent, fee, or tax for the benefit of the qualified community that is not set out by law;
(2) the provision of any vehicle to any individual or single-family unit of the qualified community other than a specialized purpose such as an ambulance, fire engine, water truck, or bus;
(3) the provision of any monetary amount, service, good, or facility for the sole benefit of an individual or single-family unit; or
(4) any matter that is illegal under any law then in force in Peru.

Article 11 Capacity of Parties to Negotiate

Where a qualified community lacks the capacity to effectively negotiate a community development agreement, the mining right holder shall assist to build that capacity including the provision of such funds to the community for capacity-building and preparation as are reasonable in the circumstances.

Article 12 Negotiation of the Community Development Agreement

(1) Subject to the requirements of consultation under the National Environmental Impact Assessment Law and the Ley del derecho a la consulta previa a los pueblos indígenas y originarios (Law of the Right to Prior Consultation for Indigenous and Native Peoples), the authorized representatives of the mining right holder and the qualified community shall conduct the negotiation and oversee the implementation of the community development agreement.
(2) The parties may employ outside assistance such as legal, technical, or financial experts or otherwise to assist in the negotiations of the community development.
(3) The parties shall develop, in writing, a community development agreement negotiation schedule that will include the date, time and issues for each negotiation meeting.
(4) Minutes shall be taken of each negotiation meeting.
(5) If the parties unable to agree on the terms of a community development agreement, they may by mutual consent seek to resolve their differences through mediation.
(6) If the holder of the mining right and a qualified community fail after reasonable good faith attempts to conclude a community development agreement by the time the mining right holder is ready to commence development work on the mining rights area, the mining right holder or the qualified community may refer the matter, jointly or individually, by notification to the Minister of the MINEM for resolution, and the decision of the Minister of the

MINEM in consultation with the regional government, thereon shall be final.

(7) A notification under the preceding provision from either or both parties shall include:
    (a) The draft community development agreement proposed by the party;
    (b) Description of the efforts to negotiate an agreement or revised agreement; and
    (c) Issues that have been agreed, issues which have not been agreed, and proposals to resolve issues.
(8) The Minister of the MINEM shall determine the matter within sixty (60) calendar days of such notification.
(9) The MINEM shall within thirty (30) calendar days from the date on which a community development agreement is approved cause a copy of the agreement or revised agreement to be put on open file at the MINEM Office.

Article 13 Approval of Community Development Agreement

(1) A community development agreement or revised community development agreement agreed and signed by the authorized representatives of a holder of a mining right and a qualified community shall be submitted for approval to the MINEM who shall, if the agreement meets the requirements set out in Article __, approve such agreement within forty-five (45) calendar days from submission.
(2) The holder of a mining right submitting a community development agreement for approval shall pay the non-refundable processing fee.
    Comment: A processing fee is optional. This provision can be deleted at MINEM's discretion.
(3) A community development agreement shall come into force upon its approval by the MINEM.
(4) If a community development agreement or revised community development agreement is not approved, the MINEM shall notify both the mining right holder and the qualified community representative, and such notices shall contain the specific reasons for denial and the means or directions by which such reasons may be corrected.
(5) The MINEM shall cause, within thirty (30) calendar days from the date on which a notification is made, a copy of the notification to be put on open file at the [_____] for access by the public.
(6) The mining right holder and the qualified community representatives may submit any number of revised community development agreements and such submissions do not require the payment of any additional processing fee.

Article 14 Duration of the Community Development Agreement

The Community Development Agreement shall come into force upon approval by the MINEM and shall be effective for the life of the mine and may be modified or amended by the parties as the need arises.

Article 15 Periodic Review of the Community Development Agreement

A community development agreement shall be reviewed at least every five (5) years from the date of signing. In the even the parties fail to mutually agree on modification to the agreement, the parties shall continue to be bound by the current community development agreement.

Article 16 Minimum expenditure requirement

The mining right holder who entered into an approved community development agreement shall expend:

(1) in the first calendar year following the commencement of mineral sales, no less than [text] percent ([number] %) of the gross revenue amount earned pursuant to that right from mineral sales in the previous calendar year;

(2) in the second calendar year following the commencement of mineral sales, no less than [text] percent ([number] %) of the gross revenue amount earned pursuant to that right from mineral sales in the previous two calendar years divided by two (2);

(3) in the third calendar year following the commencement of mineral sales and in each subsequent calendar year no less than [text] percent ([number] %) of the gross revenue amount earned pursuant to that right from mineral sales in the previous three calendar years divided by three (3) to implement the agreement(s) or otherwise promote community development.

Comment: This provides clear guidance on the fiscal amount that must be expended by a mining right holder. We note, however, that the present mining revenue generation system of Peru requires mining companies to contribute to communities through the mining canon, mining royalties and Derecho a vigencia. The MINEM to determine whether addition required expenditures is required.

(4) If during any calendar year, the holder of a mining right expends an amount on community development in excess of the annual minimum expenditure amount required, such excess amount may be applied to satisfy up to [text] percent ([number] %) of its expenditure requirement in the next calendar year.

(5) If during any calendar year during the term of the mining right the holder thereof does not expend an amount at least equal to the minimum annual expenditure amount required under this regulation, including any excess amount carried forward from the previous calendar year, the mining right shall be subject to suspension.

Comment: This provision is intended to foster compliance.

(6) Where any contribution or payments in kind are made by the holder as part of its obligations under a community development agreement, the holder shall state the value of such contributions or payments and the supporting notes to explain how the value has been determined.

Article 17 Restrictions on Disbursement of Expenditures

Any payment or money that is required to finance any activity or meet any expenditure requirements under the agreement shall be disbursed by the mining right holder and shall be used by the qualified community solely for the activities or projects that have been agreed to by the parties to the agreement

The holder shall not make any direct payment to the community Development Agreement Committee or any member of the community for any expenditures or expenses required under the agreement.

Article 18 Harmonization of community development agreements and development plans

The holder of a mining right that is required to enter into a community development agreement with a qualified community shall take into consideration:

(1) any community development agreements it has with other qualified communities so that such agreements complement one another to achieve synergistic development across the communities;
(2) any existing community development agreements entered into by that qualified community with other holders of mining rights so that its community development agreement compliments such existing agreements, and such mining right holder may, but is not required to, become a party to any such existing agreements;
(3) any government local or regional development plans or schemes so that the agreement is in harmony with and compliments such plans or schemes; and
(4) any government services provided or which will be provided to a qualified community so as not to displace that service.

Comment: There may be a variety of parties who if they coordinate their efforts can achieve more optimal development than if each works independently.

Article 19 Multiple Qualified Communities and Multiple Community Development Agreements

(1) Where the holder of a mining right is required to enter into ratified community development agreements with more than one qualified community, the holder may enter into one or several community development agreements that include multiple qualified communities, but the holder must have a separate community development agreement with a qualified community that does not want to be part of a multiple party agreement.

(2) Where a person is the mining right holder of more than one mining right and these regulations would otherwise require the holder to enter into a ratified community development agreement with the same community under each mining right, only a single community development agreement and annual community development reports are required for that community.

Article 20 Replacement of multiple agreements with single agreement

Where the holder of a mining right has entered into more than one ratified community development agreement and the parties to two or more of these agreements now want to replace their agreements with a single community development agreement, such new agreement shall be submitted for approval based on the procedures stated in this regulation.

Article 21 New community members

Any person or group of persons not appearing in the registry of persons constituting a qualified community may with the approval of the body responsible for the management of a CDA be added to such registry at any time and shall then be considered a member of that qualified community.

Article 22 New communities

Any community of persons that is not approved and listed by the MINEM as a qualified community (a) on the date that a mining right holder commenced mining operations (if after the publication date of these regulations), or (b) one hundred and eighty calendar days (180) after the publication date of these regulations (if mining operations commenced before such publication date) is not a qualified

community and a community development agreement with such a community shall be at the option of the mining right holder.

Article 23 Transfer

When a mining right is transferred to another party, the transferee shall be deemed to assume all rights and obligations of the transferor under any community development agreement relating to the mining right.
Comment: This provision is relevant in the event of change in mine ownership.

Article 24 Reportorial Requirements

(1) The holder of a mining right shall submit annually to the MINEM, with a copy thereof furnished to the qualified community, for every community development agreement to which it is a party –

(a) a report substantially as set out in Schedule 1 {Community Development Agreement [Annual] Report} no later than 60 days from end of the year describing objectives, activities, milestones and results for that calendar year, and

(b) a report and attachments substantially as set out in Schedule 2 {Community Development Annual Expenditure Report} not later than 60 days from end of the year detailing its community development expenditures and total expenditure calendar year, signed and verified by the mining right holder's authorized representative: such report shall be sufficiently detailed, including a breakdown of expenditures, for the MINEM to verify that the amount and types of expenditure meet minimum expenditure requirements.

(2) The holder of a mining right shall submit the reports required in herein in Spanish and in the local language or dialect used by that qualified community, as applicable.

Comment: Reports are necessary to enable the regulator to determine whether requirements are being met. An annual report should be the minimum reporting requirement, and more frequent reporting (semi-annual, quarterly, monthly) may be useful in some circumstances. A semi-annual reporting requirement example is provided in the model regulation.

Article 25 Transparency and Public Access

(1) All community development agreements, community development agreement [annual] reports and community development annual expenditure reports (including all required attachments) submitted by past and present holders of a mining right in furtherance of these regulations shall be open to free inspection by members of the public at the MINEM during normal Government office hours.

(2) On payment of the fee as may be prescribed by the MINEM, any member of the public shall be entitled to obtain a copy from the MINEM of any community development agreement, community development agreement [annual] report, or community development annual expenditure report submitted by a past or present holder of a mining right.

(3) A community development agreement, community development agreement [annual] reports and community development annual expenditure reports (including all required attachments) submitted by the holder of a mining right in furtherance of these regulations shall be open to free inspection by any member of the qualified community party to such agreement at the office of the mining right holder located closest to that community during normal office hours.

Article 26 Penalties

(1) A person who contravenes the reporting requirements is guilty of an offense and is liable on summary conviction to a fine not exceeding [X].

Comment: MINEM to confirm if permissible under Peruvian law. A penalty clause will ensure stricter compliance of the regulation.

(2) The MINEM may suspend without limit a mining right if the mining right holder fails to substantially comply with –

(a) Article __ (requirement to have and implement community development agreements with all qualified communities); or

(b) Article ___ (requirement to identify all qualified communities); or

(c) Article ___ (requirement to expend annual amount on community development).

(3) The MINEM shall, before suspending any mining right give notice to the mining right holder and shall, in such a notice require the holder to remedy in not less than (90) ninety calendar days any breach of these regulations.

Comment: This threat to suspend mining rights is important to achieve compliance.

Article 27 **Applicability to preexisting mining rights**

The holder of an existing mining right but which was granted prior to the adoption of these regulations is subject to these regulations and shall be in compliance with the requirements stated herein no later than two calendar years from the publication date of these regulations.

Article 28 **Regulations to prevail if inconsistent with mining agreement**

Should at any time any inconsistency occurs between a provision in these regulations and terms or conditions in a mining agreement approved by the Peruvian Government as an act of law, these regulations shall prevail unless such agreement came into force after these regulations and it specifically states that the mining agreement provisions shall prevail.

Article 29 **Preemption clause**

These regulations are supplemental to the General Mining Law and are to be observed in conjunction therewith as far as practicable but should at any time any inconsistency occur between a provision in these regulations and provisions in the General Mining Law shall prevail.

Article 30 **Effectivity Clause**

This Act shall take effect xx (xx) days following its publication in the after its publication in the official gazette El Peruano.

SCHEDULE 1. COMMUNITY DEVELOPMENT AGREEMENT ANNUAL REPORT FORM

(submit one report for each community development agreement)

1. Name of mining right holder: _____
2. Mining right registration number:
3. Year: _____ Period being reported: _____
4. Name or description of partner community: _____
5. Year in which the community development agreement with the partner community came into effect: _____
6. Year in which the community development agreement was last amended and such amendment came into effect: _____
7. Attach an explanation addressing the following points:
    a. description of the goals of the community development agreement;
    b. description of the community development objectives and how they are to be met;
    c. community development agreement activities, milestones and results for the period being reported;
    d. development program plan activities, milestones, expenditures and results for the period being reported;
    e. description of community related challenges encountered, how these challenges are or may effect the project and community development, and how the challenges are or will be addressed;
    f. other information as may be requested in writing by MINEM.
    g. other information which the mining right holder wants to report; and
    h. any such descriptions and information should be sufficiently detailed so that the MINEM can determine whether the community development agreement is succeeding.

Attestation of Truth and Accuracy

This report has been prepared under my supervision. The report is truthful and substantially accurate in all its details.

Signature: _____
Name: _____
Position: _____
Address: _____
Email: _____
Telephone: _____
Date: _____

SCHEDULE 2. COMMUNITY DEVELOPMENT EXPENDITURE ANNUAL REPORT FORM

1. Name of mining right holder :_____

2. Mining right registration number :_____

3. Calendar year for which expenditures are being reported :_____

4. Year in which mineral sales were first earned under the mining right :_____

5. Calculate Gross Mineral Sales Revenues :_____

If mineral sales first commenced in the preceding calendar year;

Sales: January 1 through December 31 of year preceding calendar year) :_____
Gross mineral sales revenue :_____

If mineral sales first commenced two years before this calendar year
Sales: January 1 through December 31 of 1st year preceding this year :_____
+ Sales: January 1 through December 31 of 2nd year preceding this year :_____
total
Divide total by 2 :_____
Gross mineral sales revenue :_____

If mineral sales first commenced three years or more before this calendar year
Sales: January 1 through December 31 of 1st year preceding this year :_____
+ Sales: January 1 through December 31 of 2nd year preceding this year :_____
+ Sales: January 1 through December 31 of 3rd year preceding this year :_____
total :_____
Divide total by 3 :_____
Gross mineral sales revenue :_____

6. Calculate the recommended community development expenditure for last calendar year

		Gross Mineral Sales Revenue from (5) x (__%)
	Recommended Community Development Annual Exependiture	:_____
7.	Calculate actual community development expendite for last calendar year (the following table can be used as an aid in calculation)	:_____

Notes:
Expenditures reported here include those incurred directly by the mining right holder or indirectly through payments by the mining right holder to a contractor, community trust, community foundation or other legal entity for the listed item.

	Type of Expenditure	Amount
a.	work or funds irrevocably committed to fulfill any obligation of the mining right holder specified in a community development agreement (attachment(s): for every community development agreement attach a detailed list of expenditures made with regard to that agreement, sum the expenditures for each agreement, and enter the total of those sums here)	_____
b.	salaries and benefits of any person responsible for managing the implementation of one or more community development agreements where such responsibilities comprise over fifty percent (50%) of that person's time	_____
c.	social baseline studies (the gathering and compilation of baseline data that describes the state of the ecological, social and economic environment and characteristics of the populations living in the area	_____
d.	social impact and opportunities assessment work (assessment of the potential ecological, social and economic impacts of the project upon communities and measures to offset potential negative impacts and maximize positive impacts)	_____
e.	competencies assessment (measuring and recording the skills in a community)	_____

f.	participatory planning (the preparation of development program plans where community members participate in the planning effort)	_____
g.	community and mining operation mapping (maps depicting what the community perceives as its community space, where mining operations will take place and when, where access is open, restricted, or closed)	_____
h.	institutional analysis processes (processes for identifying and discussing what institutions are present in and around a community)	_____
i.	problem census taking (processes by which community members articulate the problems they consider need addressing in their community)	_____
j.	implementation of [Local Authority] regional and community development program plans	_____
k.	training programs for members of a partner communities (if not included in (a)	_____
l.	consultation processes between the mining right holder and a partner community or members of a partner community and or local government which are related to the creation or implementation of a community development agreement	_____
m.	community development agreement monitoring	_____
n.	conflict management activities (the implementation of a grievance process, other than court actions, as stipulated in a community development agreement)	_____
o.	other expenditure	_____
p.	subtotal	_____
q.	to a total of not more than [text] percent ([number] %) of subtotal, administrative expenses.	_____
r.	Total Community Development Expenditure in [year]	_____

Attestation of truth and accuracy:

This report has been prepared under my supervision. The report is truthful and substantially accurate in all its details, and documentation is available to verify all expenditures

Signature: _____

Name: _____
Position: _____
Address: _____
Email: _____
Telephone: _____
Date: _____

APPENDIX D: MACUSANI TOWN AND DISTRICT

A. Ecological Landscape of Macusani Town

Due to its extreme altitude at 4,315 meters (14,157 feet), Macusani has a tundra climate and very low annual temperatures, averaging -10 – 5.0°C (20-40°F) year-round.[474] Groundwater is an extremely limited resource, with the hard salt and sediment foundation of the soil being mostly inhospitable to vegetation. Most water is captured from groundwater, as the wet season lasts only 4.5 months, and the daily chance of rain during this time averages about 34%. The dry season lasts 7.5 months, and the chance of rain on a given day during the dry season is below 10%. Lake Chaupicocha, Lake Sayt'uquta, and Lake Parinaquta are the three major water features; they are each shallow alpine lakes used for bathing, washing, and fishing, and host a variety of rare flora and fauna. These lakes are populated by migrating flocks of flamingos and other water birds, rare amphibians, both imported and native fish, and wild chinchillas and guinea pigs.

B. Demographics and Culture of Macusani Town

The Carabaya Province has ten districts or regions. It is bounded by the north by the Madre de Dios Region, on the east by the Sandia Province, on the south by Azanaro, Melgar and Putina provinces, and on the west by the Cusco Region. The capital of the province is Macusani. The people of the province are mainly indigenous citizens of Quechua descent.[475] Puno is one of the most populated regions of Peru and its northern part, where the deposits were discovered, has high poverty incidence.[476]

As of the 2017 census, Macasani town has 11,044 residents, where 73% speak Quechua and 27% speak both Quechua and Spanish.[477] Literacy rates are climbing, with 81% of the country being literate in at least one language at the A3 level. The area is primarily ethnically Quechua at 95.5% of the population, with the remaining 4.5% of the population composed of Aymara, mixto (mixed), and other demographics. Many Quechuans maintain their ancestral customs, traditions and languages and have a strong regional and local identity extending from before the creation of modern-day Peru.

The mountain range and glaciers of Cordillera Carabaya rest right next to the village and are distinct for their pre-Inca chullpas (burial towers) all along the mountain ridge. Many pre-Incan cave paintings and archeological sites exist in the Cordillera. The district has gradually been urbanized. Over time, the traditional mud and grass huts have slowly been replaced by concrete, rock, aluminum and concrete abodes.

C. Local Economy

[474] "Average Weather in Macusani", Weatherspark.com, https://weatherspark.com/y/26617/Average-Weather-in-Macusani-Peru-Year-Round.
[475] Falchani Lithium Project Ni 43-101 Technical Report -Preliminary Economic Assessment, p. 42.
[476] "Peru's vast lithium discovery: A risky economic boon?", DW Made for Minds, (last accessed May 9, 2022), https://www.dw.com/en/perus-vast-lithium-discovery-a-risky-economic-boon/a-44936017.
[477] Instituto Nacional de Estadística e Informática, Peru. 2017 data.

Macusani Town is the seat of the Macusani District, a place where 90% of exports by value are from mining.[478] The population of Macusani Town is predominantly urban and contains the Macusani Yellowcake mining office, a hospital, a cemetery, as well as several restaurants, pharmacies, and hostels for visiting climbers and backpackers. Buildings are constructed of concrete, stone, imported variegated steel or aluminum. Energy is comparatively scarce given the isolation of the town, with most of the surrounding area's energy coming from individual solar panels. Macusani town gets nearly 250 days of full sun a year and the altitude means that solar power is incredibly efficient.[479] Due to the climate and the low nutrient value of the soil, agriculture is primarily utilized for subsistence farming. The sale of agricultural products and imports creates a small trade market for villagers. There is excellent grazing space on the outskirts of the town for Andean camelids, such as alpacas and llamas. Besides that, there is very little timber or other vegetation for economic purposes. Regarding tourism, the Cordillera Carabaya mountain range receives a low but steady stream of hikers, backpackers, and climbers from within and outside Peru. They stay at hostels and pass through on their way south to Arequipa or east to Lago Titicaca and Bolivia.

D. Perception of Mining

The overall perception of mining in the Puno region among indigenous groups leans negative. Local accountability measures in place include awards for fair mining practices and certifications from private consulting groups. The nearby Oro Puno mine has certifications from the Responsible Gold Initiative (BGI), of the SECO Swiss Cooperation in Peru, ABR – Grupo Consultor y Asociados S.A.C, and Alliance for Responsible Mining. However, mining certifications are not the same in terms of evaluation methods; many certifications are a paid service after a brief consultation with local groups.

Another concern of local groups is the attention to national regulations, which are difficult to enforce on a local level. Lima cannot oversee all the daily operations of every plant, and while most Peruvians are in support of increased decentralization, they also want local governors to have more agency and capacity to offset this bias. One major problem has been the lack of capacity and resources to regularly oversee and enforce regulations in rural areas.

E. History of Mining Protests in Puno

In May 2011, protests involving blockades, shutdowns, walkouts, and 'eco-ethno' rhetoric (identified as different from the traditional "save the earth" eco rhetoric of the North) ultimately closed all mining projects in Puno for three years. These protests attracted both national and international attention due to the violence between security forces and protestors. From 2011 to 2015, 38 citizens in the Puno region died in circumstances where private mining security forces and protestors came head-to-head. Since then, protests in Puno have been mostly centered around oil and the national transportation crisis, with regular bus and taxi protests taking some attention away from mining protests in the region. The three-year ban on mining temporarily quelled the peace, but many accused the previous administration of deliberately setting a three-

[478] Marily Nunze Palomino, "Lithium in Peru", Panoramas Scholarly Platform (Jan. 1, 2020) https://www.panoramas.pitt.edu/economy-and-development/lithium-peru.

[479] "Average Weather in Macusani", Weatherspark.com, https://weatherspark.com/y/26617/Average-Weather-in-Macusani-Peru-Year-Round.

year time limit so that the new administration would have to address these serious human rights concerns going forward. The international community has not forgotten about the site, however. In 2015, Amnesty International called attention to mining protests where a 22-year-old man was shot to death by private security forces of the Southern Peru Copper Corporation. Their formal recommendation was to strengthen title rights and land ownership of Peruvian Indigenous groups so that they are protected from privatization of their ancestral lands. Also in 2015, the UN conducted a security mission in Puno to investigate the human rights abuses within mining areas. The UN Working Group on Business and Human Rights issued recommendations to the Peruvian State on the actions needed to reduce risks to human rights defenders, including legally guaranteeing Indigenous Peoples' human rights; ensuring the legal recognition and titling of their ancestral lands; stepping up efforts to remediate the pollution caused by industrial projects; ending the criminalization of human rights defenders; and tackling the impunity of those responsible for violations against defenders.[480] Despite this report, however, none of the individuals in the private security division were charged with criminal activity as a result of the deaths.

F. Lithium Mining in Macusani District

While Macusani Yellowcake's goal was to explore uranium, the mining company's website now proudly advertises the "Macusani Uranium Project" as "the largest undeveloped lithium source in the world."[481] Macusani Yellowcake did not have any environmental certification from the Peruvian government, which means that any extraction of the mineral was made without the awareness and authorization from those that live near the lithium sources. In 2020, former Peruvian energy and mining minister Juan Carlos Liu told a press conference for the foreign media that Peru had sought international assistance to develop the legal framework for lithium exploitation in the new Macusani project area. Plateau Energy Metals, Inc. says the deposit could become the world's biggest lithium mine but identified a lack of regulations on mining radioactive materials in Peru as an obstacle to overcome. The lithium at the hard rock deposit can only be reached by also extracting uranium, which brings additional regulatory problems in the handling of radioactive materials. This has increased public concern over the potential pollution of the groundwater supply and the amount of waste produced by the facility. Already in Macusani, concerns have arisen over the previous extraction process from Macusani Yellowstone. "We do not know if they damaged the groundwater," stated Edmundo Caceres, the community leader of Corani in Macusani, who pointed out his concern for the lack of respect for the rights of the rural communities surrounding the project.[482]

[480] United Nations Human Rights Office of the High Commissioner, "Statement at the end of visit to Peru by the United Nations Working Group on Business and Human Rights" (2017), https://www.ohchr.org/en/NewsEvents/Pages/DisplayNews.aspx?NewsID=21888&LangID=E
[481] American Lithium Corp. (last visited May 9, 2022), https://americanlithiumcorp.com.
[482] Marily Nunze Palomino, "Lithium in Peru", Panoramas Scholarly Platform (Jan. 1, 2020) https://www.panoramas.pitt.edu/economy-and-development/lithium-peru.

APPENDIX E: GLOBAL LITHIUM PROTESTS

Lithium mining is difficult to implement, harsh on the natural environment, and divisive among communities where lithium extraction is conducted, leading to worldwide shortages. In 2022, these shortages have led to LCE prices rising above USD12,000 a ton (or USD10,886 a tonne), more than double the levels seen in November 2021 and the highest since January 2019.[483] This provides an opportunity for large tax benefits for countries who mine and export lithium but carries several risks to the ecology and culture of the mined areas.

As of September 2020, 80% of the world's lithium refining, 77% of the world's Lithium cell capacity and 60% of the world's Lithium component manufacturing is in China.[484] China is the leader in materials refining globally, but its domination of lithium specifically gives it a political and economic advantage over countries whose technological development depends on rare earth metals, like the US and EU. Other countries aiming to compete in the overall value chain will likely need to support refining development and component manufacturing in addition to metals mining if they wish to avoid resource depletion and maximize economic benefit.

Several American states have faced both domestic and international controversy over their lithium extraction operations. In the US in 2021, tribes and environmental groups filed a preliminary injunction to halt the preliminary work conducted by Lithium Nevada at a mine site located in Thacker Pass. Adjacent to the Fort McDermitt Reservation, the mining area is home to the Paiute and Shoshone Tribe[485]. The Paiute tribe claims that the mine is built atop sacred ancestral burial grounds.[486] In Chile, native groups are protesting due to the social and environmental risks of lithium extraction. This has led to new regulations regarding mining and its effects on the environment and social landscape. This is in response to former President Sebastián Piñera's[487] bid to expand lithium production to 400,000 metric tons a year.[488]

In Bolivia, after accusations of imperialism and theft of mineral wealth by the Indigenous majority, only one contract was signed for preliminary scouring of the Salar De Uyuni before mass protests forced its cancellation. This was one week before former President Evo Morales was ousted. In Argentina, the Tres Quebradas lithium project (3Q Project) covers an area of 35,000 hectares and, while production will not begin until the end of 2023, Guayatayoc communities dependent on groundwater have already released a statement called Kachi [489] (Salt Footprints) to bring attention to the local communities.[490]

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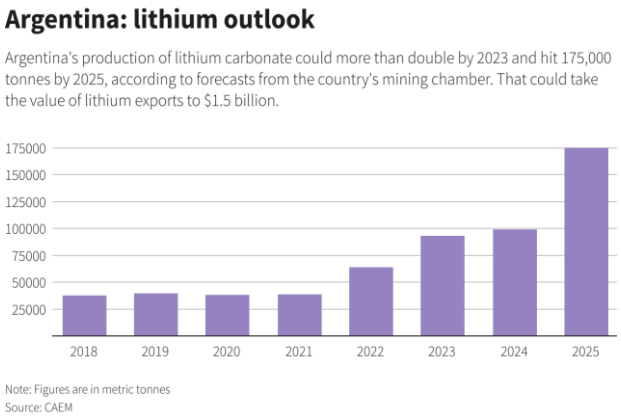
[483] Benchmark Mineral Intelligence, "Benchmark. Minerals Sets the Lithium Industry's Reference Price that is Used to Negotiate Supply Chain Contracts", Lithium: Lithium Monthly Pricing Change (MOM) (last accessed May 9, 2022) https://www.benchmarkminerals.com/lithium/.
[484] "China Dominates the Lithium-Ion Battery Supply Chain, but Europe is on the Rise", BloombergNEF, (Sept. 16, 2020) https://about.bnef.com/blog/china-dominates-the-lithium-ion-battery-supply-chain-but-europe-is-on-the-rise/.
[485] Kirk Siegler, "These Tribal Activists Want Biden To Stop A Planned Lithium Mine On Their Sacred Land", NPR (Sept. 2, 2021) https://www.npr.org/2021/09/02/1031726626/these-tribal-activists-want-biden-to-stop-a-planned-lithium-mine-on-their-sacred.
[486] Ibid.
[487] John Bartlett, "Mining of Lithium, Key to the Climate Fight, Faces New Scrutiny in Chile", The New York Times (Jan. 6, 2022) https://www.nytimes.com/2022/01/06/climate/lithium-chile.html.
[488] Clifford Krauss, "Green-Energy Race Draws and American Underdog to Bolivia's Lithium", The New York Times (Dec. 16, 2022) https://www.nytimes.com/2021/12/16/business/energy-environment/bolivia-lithium-electric-cars.html.
[489] Juan Jose Relmucao, "Lithium Mning in Argentina Threatens Local Communities", NACLA, (Jan. 18, 2021), https://nacla.org/lithium-mining-argentina-threatens-local-communities.
[490] "Zijin Plans $380m Investment for Lithium Plant in Argentina", Mining Technology, (Feb. 7, 2022) https://www.mining-technology.com/news/zijin-lithium-argentina/.

APPENDIX F: THE LITHIUM TRIANGLE

A. Examination of Argentina, Chile, and Bolivia

Argentina

Argentina is currently the fourth largest developer of lithium and has the second largest identified reserves of the mineral, surpassed only by Bolivia.[491] It is estimated to be home to 9% of the world's supply of lithium.[492] The country has been ramping up development capabilities in order to capitalize on rising prices.[493] The national government predicts a rate of increase from 38,800 tonnes of lithium extracted annually in 2021 to an estimated 175,000 tonnes a year by 2025.[494] The proposed and current mining projects all include the brine method of mining, and as a result have created concerns by environmentalists and local and indigenous communities about water depletion.[495]



In addition to high prices, lithium development in Argentina has been encouraged through a set of national policies pushed by the Fernandez government.[496] This includes a reduction of taxes on mining exports from 18% to 8%.[497] For comparison, Peru has a tax rate of 41% on mining.[498] In 2010, as a result of some of these investment friendly regulations, the Inter-American Development Bank found that Argentina had the greatest potential for lithium

[491] Person and Agustin Geist, "In Argentina's North, a 'White Gold' Rush for EV Metal Lithium Gathers Pace," Reuters (Thomson Reuters, September 14, 2021), https://www.reuters.com/world/americas/argentinas-north-white-gold-rush-ev-metal-lithium-gathers-pace-2021-09-14/.
[492] Javier Lewkowicz, "Argentina at Crossroads over the Future of the Lithium Sector," Dialogo Chino, October 1, 2021, https://dialogochino.net/en/extractive-industries/argentina-future-of-lithium-sector/.
[493] Person and Agustin Geist, "In Argentina's North, a 'White Gold' Rush for EV Metal Lithium Gathers Pace," Reuters (Thomson Reuters, September 14, 2021), https://www.reuters.com/world/americas/argentinas-north-white-gold-rush-ev-metal-lithium-gathers-pace-2021-09-14/.
[494] Ibid.
[495] Javier Lewkowicz, "Argentina at Crossroads over the Future of the Lithium Sector," Dialogo Chino, October 1, 2021, https://dialogochino.net/en/extractive-industries/argentina-future-of-lithium-sector/.
[496] Ibid.
[497] Person and Agustin Geist, "In Argentina's North, a 'White Gold' Rush for EV Metal Lithium Gathers Pace," Reuters (Thomson Reuters, September 14, 2021), https://www.reuters.com/world/americas/argentinas-north-white-gold-rush-ev-metal-lithium-gathers-pace-2021-09-14/.
[498] Person and Marco Aquino, "Peru Mining Chamber Says Tax Hike Proposal Risks $50 BLN Investment," Reuters (Thomson Reuters, December 13, 2021), https://www.reuters.com/markets/commodities/peru-mining-chamber-says-tax-hike-proposal-risks-50-bln-investment-2021-12-13/.

development.[499] In addition, the new left-leaning government hopes to provide greater gains for Argentina through the in-country development of batteries created from the mined lithium.[500] YFP, the state-owned energy company, is currently working on the creation of a battery factory to achieve this purpose.[501]

Chile

Chile has been extracting lithium since the 1980s and is the second largest lithium producer in the world, after Australia.[502] Chile is estimated to have around eight million tonnes of lithium reserves located in the Atacama Desert.[503] According to the USGS, Chile holds the greatest amount of lithium reserves in the world.[504] In 2021, Chile produced 18 metric tons of lithium, representing around 20% of the total lithium produced worldwide.[505] The only two lithium mining companies operating in Chile are the Soc. Quimica y Minera de Chile SA (SQM) and Albemarle Corp. from Chile and the US, respectively.[506] Chilean lithium production utilizes the brine method.

Lithium production, and mining generally, in Chile are large industries due to its current private sector focused constitution, but Chileans are now interested in limiting the private sector's mandate. Chile's current constitution, written under the Pinochet dictatorship, allowed for and encouraged mining companies to operate in Chile.[507] In 2021, Chileans elected a diverse body to rewrite its constitution. Since many of the electors do not belong to traditional political parties, and tend to be more progressive, it is expected that the new constitution will focus on environmental protections and rights of Indigenous people. This indicates that the current attitude towards mining in Chile is changing.

Evidence of the populations sentiment towards mining can be seen with outgoing President Sebastian Piñera's recent lithium mining concessions. In January 2022, Piñera awarded two lithium contracts to SQM and a Chinese firm, BYD, allowing the firms to produce 80,000 metric tons of Lithium over the next 20 years. This upset opposition politicians and citizens considering Piñera's term is coming to an end. They claim there was no community consultation regarding the awarding of these bids.[508] Various opposition came as a result of these

[499] Elizabeth Gonzalez, "Explainer: Latin America's Lithium Triangle," AS/COA, (February 17, 2021), https://www.as-coa.org/articles/explainer-latin-americas-lithium-triangle.
[500]Person and Agustin Geist, "In Argentina's North, a 'White Gold' Rush for EV Metal Lithium Gathers Pace," Reuters (Thomson Reuters, September 14, 2021), https://www.reuters.com/world/americas/argentinas-north-white-gold-rush-ev-metal-lithium-gathers-pace-2021-09-14/.
[501]Ibid.
[502] Rio Grande, "How Bolivian Lithium Could Help Fight Climate Change", The Economist (Jan. 21, 2022), https://www.economist.com/the-americas/how-bolivian-lithium-could-help-fight-climate-change/21806677; Somini Sengupta, "Chile Writes a New Constitution, Confronting Climate Change Head On", The New York Times, (Dec. 28, 2021) https://www.nytimes.com/2021/12/28/climate/chile-constitution-climate-change.html.
[503] "Paises sudamericanos podrian formar una OPEP de Litio", Merco Press, (Jan. 18, 2022). https://es.mercopress.com/2022/01/18/paises-sudamericanos-podrian-formar-una-opep-de-litio.
[504] Theo Riofrancos, "Opinion: The Rush to Go Electric Comes with a Hidden Cost: Destructive Lithium Mining", The Guardian June 14, 2021) https://www.theguardian.com/commentisfree/2021/jun/14/electric-cost-lithium-mining-decarbonasation-salt-flats-chile.
[505] Somini Sengupta, "Chile Writes a New Constitution, Confronting Climate Change Head On", The New York Times, (Dec. 28, 2021) https://www.nytimes.com/2021/12/28/climate/chile-constitution-climate-change.html; Eduardo Thomson & James Attwood, "Chile Awards New Lithium Contracts Despite Political Storm", Mining.com, https://www.mining.com/web/chile-awards-new-lithium-contracts-despite-political-storm/.
[506] Ibid.
[507] Ibid.
[508] Ibid.

bids. In January 2022, a lawsuit was filed in the appeals court to block these bids due to economic freedom and environmental concerns. The court did temporarily suspend the authorizations and the bidding process to proceed. The Ministry of Mines could respond to the claims.[509] In the same week, other lawmakers introduced a bill to prevent a president from offering mining contracts in the final 90 days of their term.[510] Finally, on February 1, 2022, an environmental committee in the Chilean government voted 13-6 to nationalize copper and lithium mining. Before the policy could become binding, two thirds of the national assembly would have to vote in favor of this and then there would be a national referendum.[511] The combination of these factors indicate that mining in Chile is becoming a more difficult and controversial topic.

Bolivia

Bolivia has around 25% of the world's lithium reserves, which is around 19 million tonnes, according to the US Geological Survey.[512] Although it possesses a high quantity of the mineral, its production is relatively small. In 2021, it only produced 600 tonnes of lithium. The only firm extracting the mineral is Yacimientos de Litio Bolivianos (YLB), the national lithium company. It controls all extraction and processing of the precious metal. It has had recent leadership challenges, where it is has been run by six different presidents in the past two years.[513] It is also negatively impacted by various physical restrictions.

To extract lithium, Bolivia pumps brine liquid from underground and uses the evaporation method. In Bolivia, its rainy season lengthens the evaporation process.[514] In addition, its brine is less pure because it has higher concentrations of magnesium unlike Chilean brine, which has a higher lithium.[515] In addition, only 96 out of the 160 evaporation pools are in use.[516] YLB lacks necessary technology to boost its efficiency.[517] These limiting factors help explain the low lithium output of Bolivia, when compared to neighboring lithium-producing countries. That said, President Luis Arce of Bolivia wants to make Bolivia the "world capital of lithium."[518] However, the country has had recent difficulty with working with international firms.

In 2018 the Bolivian government's attempt to bring in foreign investment led to successes and failures. The government hired two Chinese firms, Maison Engineering and China Machinery Engineering Corporation (CMEC), to build lithium carbonate plants that could make 15,000

[509] Miguel Vargas, "Corte Chilena Suspende Proceso de Licitacion del Litio", TeleSURtv.net (Jan. 14, 2022), https://www.telesurtv.net/news/chile-corte-apelaciones-copiapo-suspension-licitacion-litio-20220114-0027.html.
[510] John Bartlett, "Mining of Lithium, Key to Climate Fight, Faces New Scrutiny in Chile", The New York Times (Jan. 6, 2022), https://www.nytimes.com/2022/01/06/climate/lithium-chile.html.
[511] James Attwood & Valentina Fuentes, "Chile Vote Marks First Step in Long Path to Seizing Mines", Bloomberg Markets, (Feb. 1, 2022) https://www.bloomberg.com/news/articles/2022-02-01/chile-vote-marks-first-step-in-long-path-to-nationalizing-mines.
[512] Bostjan Videmsek, "In Search of Bolivia's White Gold", The Boston Globe (Jan. 15, 2022) https://www.bostonglobe.com/2022/01/15/opinion/search-bolivias-white-gold/; Rio Grande, "How Bolivian Lithium Could Help Fight Cliamte Change", The Economist, (Dec. 8, 2021), https://www.economist.com/the-americas/how-bolivian-lithium-could-help-fight-climate-change/21806677.
[513] Rio Grande, "How Bolivian Lithium Could Help Fight Cliamte Change", The Economist, (Dec. 8, 2021), https://www.economist.com/the-americas/how-bolivian-lithium-could-help-fight-climate-change/21806677.
[514] Ibid.
[515] Ibid.
[516] Ibid.
[517] Ibid.
[518] Bostjan Videmsek, "In Search of Bolivia's White Gold", The Boston Globe (Jan. 15, 2022) https://www.bostonglobe.com/2022/01/15/opinion/search-bolivias-white-gold/

tonnes of the mineral on an annual basis. While this development did not cause national upset, the plant's progress is very delayed.[519] As of February 2021, the plant is still under construction and was only 59% complete at the time. It was supposed to be complete in the first quarter of 2020.[520] This investment seemed to not create a negative within Bolivia. Also in 2018, the Bolivian government also a German firm, ACI Systems (ACI), to build a lithium hydroxide plant. In this deal, Bolivia would have owned 51% of the plant and ACI would have significant say in European sales of the mineral. Many Bolivians were vehemently opposed to this deal. There was a week-long hunger strike, which caused former president Evo Morales to cancel this deal.[521] Considering the mixed success of foreign investment, the government will need more foreign assistance in upgrading its lithium production.

To advance Bolivian lithium production, the Bolivian government announced it would allow eight foreign companies to engage in pilot programs to boost lithium carbonate production in 2021.[522] There are firms from Argentina, China, Russia and the United States participating in this program, under the supervision of the national firm YLB.[523] Shortly after this bidding process, protests blocked roads in opposition of the head of the lithium agency and their desire to participate in decisions relating to lithium.[524] In December 2021, the energy minister clarified that countries can development lithium in Bolivia, as long as they respect its sovereignty.[525] Clearly, Bolivia is attempting to increase its lithium production, but it will still face hurdles relating to community consent and nationalist, energy policies.

[519] Rio Grande, "How Bolivian Lithium Could Help Fight Cliamte Change", The Economist, (Dec. 8, 2021), https://www.economist.com/the-americas/how-bolivian-lithium-could-help-fight-climate-change/21806677.
[520] Edwin Miranda, "La Planta Industrial Para Law Produccion de BAterias de Litio de Llipi Tiene Avance Fisico Del 59%", Bolivia Energia Libre (Feb. 19, 2021) https://www.boliviaenergialibre.com/energia/la-planta-industrial-para-la-produccion-de-baterias-de-litio-de-llipi-tiene-avance-fisico-del-59/.
[521] Rio Grande, "How Bolivian Lithium Could Help Fight Cliamte Change", The Economist, (Dec. 8, 2021), https://www.economist.com/the-americas/how-bolivian-lithium-could-help-fight-climate-change/21806677.
[522] Bostjan Videmsek, "In Search of Bolivia's White Gold", The Boston Globe (Jan. 15, 2022) https://www.bostonglobe.com/2022/01/15/opinion/search-bolivias-white-gold/
[523] Ibid.
[524] Clifford Krauss, "Green-Energy Race Draws an American Underdog to Bolivia's Lithium", The New York Times (Dec. 16, 2021) https://www.nytimes.com/2021/12/16/business/energy-environment/bolivia-lithium-electric-cars.html.
[525] Ibid.

APPENDIX G: COMMUNITY PARTNERSHIP AGREEMENT

(NOTE: This is lifted from the 2020 Capstone.)

Community Partnership Agreement

TABLE OF CONTENTS

TEMPLATE COMMUNITY PARTNERSHIP AGREEMENT

[Note: The first draft of this Community Partnership Agreement should be prepared by lawyers acting for the Community who shall manage the negotiation of the Agreement with both the Project Company and its legal representation until execution of the Agreement. The provisions in this Agreement are not exhaustive but serve as a framework for the relationship between the Project Company and the Community. The lawyers acting for the Community may add to, amend or delete any provisions of this Agreement at their complete discretion when preparing the first draft of the Agreement with the exception of the following mandatory provisions which must never be deleted because the purpose and effectiveness of the Agreement will be undermined: Article 2 (regarding the obtaining of the free, prior, informed Consent of the Community) and particularly Article 2.9 (the cross- default provision which is the linchpin of this Agreement), Article 4.1 (mandatory conditions for Consent), Article 7 (breach and consequences of breach by the Project Company) and Article 8 (parent company guarantee) and accompanying Schedule 6.]

For further information please contact:
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Bettina Braun (nbb2132@columbia.edu)

This **Agreement** is made on [insert date] among

(I) [insert name of the community] of [insert location of the community] (the "**Community**"); and (II) [insert name of the company] incorporated in [insert jurisdiction] under company registration number [insert company registration number] (the "**Project Company**"), and

[Note: We recommend that a community organize itself as a Community Board made up of community members, such as (a) trust with a board of trustees, (b) a closely held corporation with a board of directors, or (c) a pre-existing organizational structure, such as a committee of elders or representatives. The Community may also decide to keep the special legal status that the local law awards.]

(III) the obligations of the Project Company under this Agreement are to be guaranteed by [insert name of parent company] incorporated in [insert jurisdiction] under company registration number [insert company registration number] (the "**Parent Company**") in accordance with Article 8 of this Agreement; and

(IV) this Agreement has been supervised and approved by [insert name of local government entity and name of representative] (the "**Local or Regional Government**") and the Government of [Insert Name] represented by [insert name of the Ministry executing this Agreement and name of representative] (the "**Central Government**").

(The Project Company, the Community, and the Government are referred to collectively as the "**Parties**" and individually as a "**Party**.")

Whereas:

Projects related to the exploitation of natural resources are distinct from other entrepreneurial industries' activities, owing to the all-encompassing impact that they might have on communities, including but not limited to an impact on the quality of life, lifestyle, environment, health, traditional occupations, transport, and educational and economic opportunities of the Community. It is functionally imperative for there to be a partnership agreement with the Community, and to have one that is cognizant of, and is able to mitigate, the broad range of foreseeable and unforeseeable impacts that accrue as a result of projects on the exploitation of natural resources.

The Project Company recognizes and acknowledges that obtaining the full, prior, informed consent of the Community impacted by the Project is a requirement under international standards to initiate, develop, operate and maintain the Project.

The Project Company recognizes and acknowledges the critical importance of protecting, and not adversely affecting, the environment, the cultural distinctiveness and the social and economic well- being of the Community and of safeguarding the health of all of the individual members of the Community.

The Project Company recognizes and acknowledges the rights, titles and interests of the Community on and to its territory.

The Project Company recognizes and acknowledges that the Community surrenders certain rights over its territory by consenting and agreeing to the Project but only to the extent of the Project as disclosed in writing to the Community under this Agreement.

The Project Company recognizes and acknowledges that it has to fully perform all of the obligations and fulfil all of the conditions set out in this Agreement to (i) obtain and maintain the consent of the Community and (ii) provide benefits from the Company's exploitation of natural resources to the Community as set out in this Agreement. The Parent Company acknowledges and agrees that it guarantees all of the obligations of the Project Company for the benefit of the Community, Central Government and Local Government under this Agreement.

The Project Company agrees that this Agreement is in full conformance, and is not in conflict, with any provision of any international treaty or agreement to which the state or the Government is a party.

The Parties agree that this Agreement is legally binding in accordance with its terms and judicially enforceable under the relevant laws of [insert name of jurisdiction that is hosting the Project] and applicable international treaties.

The Parties agree that this Agreement is fundamental to the grantING and continuance of the Operations License and is an integral part of such Operations License. The Parties agree that a Material Breach of the Agreement, as set out in this Agreement, constitutes an immediate breach under the Operations License and shall result in the revocation of Operations License by the Central Government.

Article 1 - Definitions and Interpretation

1.1 "Agreement" means the Community Partnership Agreement, sometimes referred to as the CP Agreement.

1.2 "Central Government" refers to the national government of the country where the Project is taking place, which is party to the Agreement. Also referred to as the State.

1.3 "Community" includes all groups and adult individuals of voting age, across the gender spectrum, who reside in the Environmental Impact Zone (1.7) of the Project, in whole or in part, including but not limited to the Displaced Community.

1.4 "Community Board" is the group of Community members that will sign the Agreement on behalf of the Community. As the Community's leadership, they should be chosen by the Community on the basis of their consistent involvement and participation in the Community, and may choose to organize per a pre-existing organizational structure or a closely held corporation led by a Board of Directors. Ideally, these people are considered pillars of the community. We advise against including elected officials of a transitory nature. Also referred to as the Community's Leadership.

1.5 "Consent" means the consent that the Project Company is required to obtain from

the Community under Article 4.

1.6 "Corruption" means the abuse of public office for private gain. Public office is abused for private gain when an official accepts, solicits, or extorts a bribe. It is also abused when private agents actively offer bribes to circumvent public policies and processes for competitive advantage and profit. Public office can also be abused for personal benefit even if no bribery occurs, through patronage and nepotism, the theft of state assets, or the diversion of state revenues. This definition will also include any broader definition under any international treaty or agreement to which the Government of [insert name of host jurisdiction of the Project] is a party or which is applicable to it.

1.7 "Community Negotiations Team" will be the team participating in the negotiations of the Agreement and will be made up of the Community Board, along with Local and Central Government officials that will side on protecting the Community's interest, and may potentially include—per the community's approval—NGO and third-party experts as individuals and not institutions.

1.8 "Displaced Community" includes all those groups and individuals who have to change their place of residence and/or their mode of earning and/or customary occupational method and/or area and/or forgo having or storing or housing their property in a specific place as a result of the Project.

1.9 "Environmental Impact Zone" includes but is not limited to the area of impact of the Project according to the Environmental Impact Assessment(s) prepared by the Project Company and approved by the Central Government's competent entity. The Environmental Impact Zone shall consider, at least, the zone in which objectively and where possible quantifiable, the significant environmental impacts caused by the execution of a project, work or activity, over the biotic, abiotic and socioeconomic means, in each of the elements of such means. The impacts should be assessed cumulatively with the impacts of surrounding projects and should be assessed on an ongoing basis.

1.10 "Exiting Company" is the Project Company transfering all rights and obligations to a New Company.

1.11 "Internal Emergency Fund" refers to a separate fund the Project Company must maintain at all times for the purpose of financing any crisis or breach of the Agreement that arises during any phase of the project, and must be set up before the signing of the Agreement so that the funds are immediately available as needed.

1.12 "Local Government" refers to the government of the municipality, township or village where the Project is located or nearest to, a representative of which may sign the Agreement as a governmental party the Agreement.

1.13 "Major Stage of the Project" means any of the stages as set out in Article 2.2.

1.14 "Material Breach" means any breach of this Agreement by the Project Company which has more than a minor adverse effect on the Community, whether in whole or in

part, and including any minor breach that is not cured within thirty days of the notification of the breach by the Community to the Project Company.

1.15 "New Company" the Project Company succeeding the Exiting Company and taking responsibility for all existing liabilities and obligations under this Agreement.

1.16 "Operations License" means the concession granted by the Government and any and all licenses to be granted to the Project Company or any of its subsidiaries or affiliates by the Central Government in respect of the Project in accordance with any other relevant/applicable law in effect at the time of granting the concession and during the life of the Project. Also referred to as License to Operate.

1.17 "Project" means the proposed project to be carried out by the Project Company in [insert location] as described in Schedule 1 and any and all activities to be carried out by the Project Company in connection with the Project in accordance with the project as approved by the Central Government under the applicable laws.

1.18 "Project Company" refers to the company carrying out the private enterprise (Project), which is party to this agreement.

1.19 "Regional Government" refers to the government of the province or department where the Project is located, a representative of which may sign the Agreement as a governmental party to the Agreement.

1.20 "Restoration Fund" means the bank account that the Project Company must establish and maintain fully funded at all times in accordance with Article 2.8.(a)

1.21 "Social Wealth Trust Fund" means the bank account that the Project Company must establish and maintain in trust for the benefit of the Community which is fully funded at all times during the life of the Project in accordance with Article 2.8.(b)

1.22 "Sustainable Development Plan" means the long-term Sustainable Development Plan spearheaded by the Community Board and other members of the Community Negotiations Team, in consultation with the Social and Economic Development departments of the Local and Regional Governments, with the assistance and advice of the Central Government and any non- governmental organizations or third-party experts (as applicable), and as set out in Schedule 3.

1.23 "Third-Party International Institution" refers to independent institutions with relevant experience in project finance and sustainable development, engaged through regular auditing, dispute mediation, or other activity that would benefit from oversight.

1.23 The terms and conditions of this Agreement are to be interpreted in the best interests of the Community at all times. The Project Company agrees to apply the best and most advanced technology and resources available to fully perform its obligations and fulfil the conditions under this Agreement. Such technology and resources are to be constantly updated throughout the life of the Project.

Article 2 - Rights and Obligations of the Project Company

2.1 - Obtaining Consent

The Project Company acknowledges that it has the right to conduct the Project conditional on its obtaining the Consent of the Community in accordance with Article 2.2 below. The Project Company agrees that it cannot operate or continue to operate without obtaining Consent from the Community in accordance with this Article 2.

2.2. - Free, Prior and Informed Consent

The Project Company agrees that any Consent given under this Agreement by the Community to the Project Company must be free, prior and informed as follows:

(a) Free: The Consent must be given openly and transparently without coercion, intimidation, manipulation or corruption of any member of the Community or of its representatives by any other member of the Community or the Company or any third party.

For the purposes of this para (a), for consent to have been given by the Community, a supermajority vote (meaning at least two-thirds) of all members of the Community must have been obtained at a documented meeting of the Community where all members are present, and of those who vote, at least 50% must be women.

If the Project Company only obtains consent to the Project from one member of the Community or from an executive committee representing the Community (such as a *Junta Directiva*) only, even if that member (such as the president of the Community) or executive committee purports to represent the entire community, such consent shall be deemed null.

The Project Company must notify the Community each time it requires a decision from the Community under this Agreement. The Community will then call a vote giving every member of the Community [5] days' notice of the vote.

All votes held by the Community under this Agreement must be on an anonymous basis. The Community's leadership must ensure that each Community member is able to write his or her decision on a piece of paper and to post it in a ballot box.

No vote of any member of the Community may be purchased or otherwise influenced by the offering of any personal benefit or gain to that Community member in order to achieve a particular decision by the Community.

(b) Prior: The Project Company must obtain consent from the Community before:

(i) the Project Company begins exploration for the Project;
(ii) the Project Company starts every Major Stage of the Project;
(iii) every change in scope of each Major Stage of the Project; and

(iv) every material development which could impact the Community during the life of the Project.

For the purposes of this para (ii), a "Major Stage of the Project" shall include each st-age of the Project, including without limitation: (a) Any initial activities on the territory of the Community; (b) Licensing; (c) Exploration; (d) Exploitation; and (e) Closure.

(c) Informed: The Project Company, Local Government and Central Government shall share with the Community all relevant information before any consultation process with the Community and before every request for Consent that the Company makes to the Community in accordance with this Agreement, including, without limitation, any information relating to any potential or actual impacts of the Project (a) on any member of the Community; and (b) on the water and environment.

The Project Company shall ensure that:

(i) the Community has ready and easy access to all information in both digital and hard copy form that is understandable and in both Spanish and the Community's local preferred languages; and

(ii) the information is sufficient, accurate and complete; and

(iii) the Community has the capacity, or is given the capacity, to make informed decisions in a reasonable time period so that the Community has time to digest and understand the information and ensure that all members of the Community have read all the relevant information provided to them and/or have been provided with an adequate explanation of all the relevant information by the Project Company.

(iv) that each transfer of information acknowledges the possibility of unforeseeable impact and takes responsibility for it.

The Local Government agrees that it shall be present at each stage of negotiation of any change to the terms of the Consent given to the Project Company under this Agreement.

2.3 - Consent limited to the Project only

Any Consent given by the Community to the Project Company is only valid for the Project and any aspect of the Project in respect of which Consent has been obtained by the Project Company. Consent does not extend to any other activities in any other area. Any deviation from the Parties' agreement as to the Project constitutes a change that requires renewal of Consent, unless it is minor in nature in which case, the Project Company has the burden of proving to the Community, Local Government and Central Government that it is minor and does not require any further Consent.

2.4 - Project Company to maintain Consent throughout the life of the Project

The Project Company shall fully perform its obligations and fulfill all the conditions under this Agreement in order to maintain the Consent of the Community throughout the life of the Project and the term of this Agreement.

2.5 - Notification of Consent to Local Government and Central Government

The Community shall notify Local Government in writing which shall notify Central Government each time Consent has been granted to the Project Company. For the purposes of this Article, the representative for the Central Government shall be [Insert Representative] or any other agency that undertakes its responsibilities in the future. The notification must include the details of the Major Stage of the Project, the material development or change in scope, as applicable, to which the Community has consented.

2.6 - Full and accurate disclosure by the Project Company

The Project Company certifies that all information necessary for the Community to make a free, prior, and informed decision as to whether to give Consent to the Project Company under this Agreement has been disclosed and that this information is sufficient, true, complete and accurate. The Project Company undertakes that should it discover that any information that has been delivered to the Community is no longer sufficient, true, complete and accurate or that it has not communicated any material fact to the Community, it shall immediately inform the Community and provide it with the corrected or outstanding information in writing.

2.7 - Regular Dialogue between Project Company and Community

The Project Company shall meet with the Community at the start of exploration and thereafter, a minimum of every [2] months during each Major Stage of the Project until [24] months after closure of the Project to ensure open lines of communication with the Community and the prompt resolution of any issues that may have arisen under this Agreement including any breaches of this Agreement by the Project Company.

2.8 - Funds for the Community

The Project Company shall create, fund and maintain the following funds which shall be fully funded at all times with sufficient funds to carry out the purpose of each Fund as set out below. The Project Company shall ensure that each of the below funds is fully funded if, after a mandatory inspection to be completed by an independent third party every [5] years, a shortfall in the amount required to service the purpose of the Fund is reported by that independent third party to the Project Company and the Community as joint beneficiaries of that report. The Company shall establish each fund in such a way that all funds

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held within the bank account are held in trust for the benefit of the Community and not the Project or Parent Company or any other third party.

(a) Restoration Fund: The Project Company shall set up a Restoration Fund and apply the funds only to restoring the project site to the original condition of the land, as best it can by applying the best and most advanced technologies, processes and standards after the project is completed. An amount of money will be set aside, to be determined, but no less than the amount required to restore the relevant territory. The Project Company needs to show that it has the available funds in order to attain a License to Operate. The Project Company is responsible for maintaining the account throughout the life of the project, otherwise it will lose its License to Operate. The reserves should be covered by insolvency-proof and liquidation-proof security. The Central Government and an appropriate third-party international institution will periodically audit the reserves. The amount necessary to restore the land is recalculated periodically to account for changes in the Project.

(b) Social Wealth Trust Fund: The Project Company shall apply the funds to three beneficiary accounts 1) a *Development Fund* to support the Community's Sustainable Development Plan, 2) a *Crisis Fund* for any emergency as determined by the Government and Community, which does not necessarily need to be used for damages caused by the Project Company, and a 3) *Rainy Day Fund*. Each of these three accounts will receive an agreed percentage of the taxes collected by the Central Government that are then designated to the Social Wealth Trust Fund. The percentage allocation is to be discussed in detail during CP Agreement negotiations.

The *Development Fund* will be deployed for the specific initiatives of the Sustainable Development Plan. This Plan will be spearheaded by the Community Board with other members of the Community Negotiations Team in consultation with both the Government (Central and Local) and third-party experts to meet their objectives. The Project Company is not responsible for developing this plan but rather for supporting it by sustaining the fund.

The Social Wealth Trust Fund will have a *Board of Trustees* with two requirements only: 1) ensure that money is coming in and 2) police money that is spent. They do not originate the proposals for spending the money but may have veto power on how the money is spent. Furthermore, there will always be an odd number of members and each must meet the criteria of independence *[to be defined by 2021 Capstone]* and competence. The Government will hold the *Board of Trustees* accountable for liabilities, potentially with the aid of local observers. Any of the Community, Local Government and Central Government shall have the right to audit and inspect the accounting and application of the Social Wealth Trust Fund at any time on reasonable notice to the Project Company and *Board of Trustees*.

(c) Internal Emergency Fund: The Project Company shall apply the funds contained within the Internal Emergency Fund for the purpose of (a) remedying any (i)

breach by the Project Company of its obligations under the Agreement as shall be notified to the Project Company by the Community in accordance with Article 7, (ii) accident during the course of its operations or (iii) impacts to the Community and environment as a result of the effects of any natural disaster on the Project and (b) ensuring that all members of the Community are safe, sheltered and have access to (i) uncontaminated food and water and (ii) medical services if required as a result of the Project Company's breach, an accident during the course of its operations or the effects of any natural disaster. *[Note: Capstone 2021 team to investigate further how to calculate how much should be maintained in the Internal Emergency Fund e.g. the scale of fixing an emergency will obviously differ from project to project.]*

2.9 - Cross-default between Agreements with the Community

(i) This Agreement does not alter any other obligations of the Project Company under the Operations License, any other agreements with the Community (including any land agreements the Project Company has entered into with the Community, which must also be obtained with their free, prior, informed consent), any other agreements with governmental entities or other communities and any applicable laws.

(ii) The breach by the Project Company of any obligations under the Operations License shall also constitute a breach of this Agreement, and a breach under this Agreement shall constitute a breach under the Operations Licenses and the applicable laws.

2.10 - No conflict

In the event of any conflict between the terms of the Operations License and any other agreements entered into by the Project Company under which it has obligations to the Community and the terms of this Agreement, the terms of this Agreement shall prevail in all respects. *[Note: Capstone 2021 team to thoroughly review standard land agreements and mining/renewable energy projects concession agreements to ensure all the agreements dovetail.]*

Article 3 – Rights and Obligations of the Community

3.1 The Community gives Consent for the Project to be undertaken by the Project Company as described in Schedule 1.

3.2 Any Consent given by the Community under this Agreement is subject to the full performance by the Project Company of its obligations and the full compliance by the Project Company of the conditions under this Agreement.

3.3 Any Consent given by the Community must be maintained subject to review in the presence of the Project Company, the Community and a representative of Local Government [every 6 months or annually] during the lifetime of the Project, and a minimum of three months before the engineering schedule of the Project is launched as described in

Schedule 4.

3.4 The Community may withdraw its Consent and the Operations License shall be immediately deemed suspended if:

(a) There is a Material Breach by the Project Company of its obligations under this Agreement, its Schedules, and/or any complementary agreements with the same Community as
democratically determined by the Community, and verified by an independent expert where relevant;

(b) Any Consent given by the Community under this Agreement is shown not to have been free, prior, informed and/or renewed in a timely manner by the Project Company;

(c) Any statement or representation by the Project Company proves to have been negligently and/or willfully incorrect, misleading, or incomplete;

(d) Any statement or representation by the Project Company proves not to have been updated upon the realization of new or additional information and/or any change in circumstances surrounding the said statement or representation;

(e) Any allegation of environmental harm or damage arising from the Project proves to be true upon investigation, which shall be concluded within [60 days], or if such an allegation of environmental harm or damage goes uninvestigated and unremedied within the said time frame [60 days]; and

(f) Any act of [Corruption or bribery], any allegation of which has to be conclusively investigated by the [local fiscal unit responsible for corruption] within [45 days], has occurred in connection with the securing or maintaining of the License, the Agreement or the Consent, or in the conduct of the Project.

3.5 If Consent is not renewed, as specified in [Schedule 5], within [90 days], after it is revoked, the Operations License will be deemed null and void.

3.6 The Community has the right to notify Local Government and/or Central Government or any of its respective governmental representatives or entities of any complaints it has of non-compliance with any of the terms and conditions of this Agreement by the Project Company in accordance with the following process:

(a) [Any member of the Community is free to complain either to the Community Board or directly to the Project Company. No member of the Community shall inhibit any other member of the Community from complaining to the Project Company]; and

(b) [Note: Capstone 2021 team to insert detailed mechanics for the complaint mechanism with Local Government and Central Government.]

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3.7 The Community is obliged to make representatives, chosen through consensus or democratic means, available at meetings organized for any periodic review and dispute resolution in respect of the Project.

3.8 This Agreement is without prejudice to any other rights and remedies available to the Community under applicable law. The Agreement does not restrict the ability of the Community to participate in any public forum, consultation process, or organization.

Article 4 – Conditions for Consent

4.1 In order to maintain the Consent of the Community, the Project Company agrees to the following mandatory conditions which may not be altered at any time:

(a) To ensure access to pollution free water and land at all times by the Community during the life of the Project.

(b) To provide drinking water and clean running water, a sewerage system and electricity to all households of the Community twenty-four hours a day, seven days a week.

(c) To ensure the Community has the same level of access to drinking water and clean running water throughout the life of the Project as the Community had before the Project Company began its operation of the Project, and where the Community had no access to drinking water or clean running water before the operation of the Project, to provide the Community with access to such water for the life of the Project.

(d) To ensure the Community has access to sufficient clean running water to allow the Community to grow and develop throughout the life of the Project and beyond. To not drain or exhaust the water sources available to the Community during the life of the Project. In no circumstances shall the Community have access to less water during and after the Project has closed than it had before the Project was started by the Project Company.

4.2 In order to maintain the Consent of the Community, the Project Company agrees to the following further conditions:

[Note: The following list is exemplary and non-exhaustive for the conditions that are tied to Consent being given by the Community. It entails a variety of health, education, environmental, economic, monetary and other measures, one or more of which the Project Company has to fulfill in order to obtain or maintain Consent. The conditions should be confirmed through dialogue and negotiations between the Project Company and the Community. Proper assistance to the Community should be provided by professional advisors and the Government. Ideally, the Government should be responsible for managing the needs, priorities, and expectations of the Community. The Community should determine the long-term Sustainable Development Plan for its Community in collaboration with the Social and Economic Development

Departments (or equivalent) of the Local and Regional Government and as approved by the Central Government:]

(a) To support the Sustainable Development Plan by funding the Sustainable Development Fund in accordance with this Agreement.

(b) To create and implement avoidance and/or mitigation measures to protect the environment from any adverse impacts that arise out of or in connection with the Project during the life of the Project including a twenty-four-month wrapping-up process upon closure of the mine.

(c) To fully and adequately compensate each member of the Community for the acquisition of property rights / rights to use the land in the form of a payment in the amount of [insert amount] [to buy the land] / [per [insert amount of time, i.e. days/month/year] to use the land during the life of the Project.

(d) To refrain from damaging, destroying, limiting access to or displacing any member of the Community from its territories (unless in respect of displacement as otherwise agreed with the Community in accordance with the terms of this Agreement).

(e) To resettle any Displaced Community if its place and method of primary residence or earning is negatively impacted by the Project and to compensate that Displaced Community if its property is negatively impacted by the Project.

(i) In any event, all resettlement plans and timelines to be decided and finalized in formal consultation with the Community, through mechanisms decided at the time of this agreement and appended to Schedule [X]. (ii) All resettlement plans will ensure complete access to clean drinking water, sanitation and power; and, they will aim to maintain economic and infrastructural parity between the Displaced Community and the Project's own employee's standard of living. (iii) All resettlement plans will respect, accommodate and replicate where desired, to the greatest degree possible, the traditional lifestyle of the Displaced Community, including the geographical and architectural spread of the Displaced Community itself. (iv) All resettlement plans, particularly in cases where primary modes of earning have been disrupted by the Project, will envisage and include avenues of realistic earning and/or employment. (v) Training for employment in the Project to be provided, if so desired by the Displaced Community, in time for Project activities to begin. (vi) Any other provision mutually agreed.

(f) To offer employment and training for adequate employment to willing Community members with the Project Company at the local site of the Project or elsewhere in accordance with the Sustainable Development Plan. [The Community should determine what proportion of the Community wants to be employed by the Project. This could potentially be proportional to the employment lost or compromised due to displacement in respect of a Displaced Community.] The Project Company must ensure that Community employees will receive equal labor protections and services

(including but not limited to family healthcare plans and pension funds) to that of any other employee of the Project Company.

[Note: Capstone 2021 team to examine the best standardized employment strategy to be adopted.]

(g) If employment by the Project Company requires qualified training or education:

(i) To provide necessary training to members of the Community for employment at Project sites and to provide, or provide any funding for, any training for such members of the Community to obtain any further qualifications they might need to operate on an equal basis alongside any personnel the Company brings to the Project site.

(ii) To comply with the Sustainable Development Plan as to how to train and educate members of the Community willing to work on the Project sufficiently in advance of the commencement of operations of the Project so that such members are qualified and ready to be employed on the Project at the same time as any personnel the Project Company brings to the Project site and a further plan as to how to train and educate members of the Community so that they will be qualified and ready to be employed during further stages of the Project.

(h) To construct / renew / maintain access and roads on the Project site, in and around the Project and the Community (including any such infrastructure as is agreed in the Sustainable Development Plan).

(i) To provide health care and insurance to employed members of the Community of the same standard as provided to the Porject Company's executive workers.

(j) To provide free WI-FI internet access at all times to the Community [and to provide [insert names of [at least five] representatives of the Community with fully functioning cell phones (to the extent they do not already possess them)] to facilitate communication between the Community and the Company]. [To provide publicly available computers in the local town hall/municipal office and in the local office of the Company and in the local school where members of the Community who do not have access to computers can access the internet (including a digital copy of this Agreement).] [To provide the Community, in the local town hall/municipal office and in the local office of the Company non-removable tablet devices which contain a permanent copy of this Agreement on such device].

(k) [To pay to the Community a royalty rate of [insert %] of all gross income before tax generated by the Project to the Social Wealth Trust Fund. *[Note: Capstone 2021 team to develop the mechanics of the Sustainable Development Fund. This should be a regime that operates entirely separately to the canon minero]*

(l) Other payments / compensation [insert].

4.1 The Project Company shall bear the entire cost of performing its obligations and ful-

filling the conditions under this Agreement [but shall be entitled to tax credits, as determined by the Central Government, in respect to the infrastructure it provides under the Sustainable Development Plan as set out in Schedule 3].

Article 5 – General Obligations

5.1 The Project Company shall preserve the environment, and cultural, and social ties of the Community as they existed before the Project Company arrived. It shall not engage in any illegal, detrimental or corrupt business practices. The Project Company shall not engage in any activity that gives rise to or can result in a non-minor negative effect and/or disturbance on the environment and the Community (or any member of the Community) and its territories, including but not limited to the social, economic and/or cultural conditions in which the Community operates.

5.2 The Project Company shall respect and not interfere with any of the cultural characteristics, traditions, practices, customs, heritage and language(s) of the Community.

5.3 The Project Company shall conduct all communication with the Community in the preferred local language(s) of the Community at all times. It is the Project Company's responsibility to provide at its entire cost multiple interpreters of the preferred local language(s) for any and all communication with the Community and this includes translating any relevant information that is to be provided to the Community into the Community's preferred local language(s).

Article 6 – Procedure for Obtaining Consent

6.1 - Disclosure of Information

6.1.1 The Project Company agrees to disclose to the Community all information relevant to the impact of the Project and shall give the Community sufficient time to analyze, study and understand such information. Such information shall include:

(a) a detailed description of the Project;

(b) all anticipated socio-economic and environmental impacts of the Project and periodic follow-up reports of any individual and accumulated impacts subsequently discovered;

(c) a proposal from the Project Company on how to monitor, avoid, and mitigate, to the maximum extent technologically and procedurally possible, any adverse impacts arising out of or in connection with the Project, applying the best and most advanced technologies, procedures, and standards and on how the inclusion of Community members in the monitoring of impacts will be ensured;

(d) a proposal from the Project Company on how to optimize and share benefits, including royalty payments in the case they are agreed to as per Article 4.1(k), with

the Communities;

(e) a proposal from the Project Company on the creation of employment for Community members at the local Project site;

(f) any report, study, or assessment deemed necessary by the Community related to the Project created by the Project Company or any third party; and

(g) any other information that is required for the Community to make a fully informed, free, decision and to create a concrete and effective Sustainable Development Plan.

6.1.2 No applicable information can in any way be omitted, concealed or misrepresented. The Project Company must give notice to the Community of any change of information and the Consent must be renewed respectively.

6.2 - Procedure

Upon disclosure of the information according to provision 6.1, the Project Company shall conduct the following to obtain Consent:

(a) Notify the office of [Insert Relevant Authority: i.e Defensoria del Pueblo] that has jurisdiction over the territory of the Project for them to take the appropriate actions to ensure the respect of the Community's rights;

(b) Ask permission from the Community to enter the territory and meet with local Community leaders;

(c) Agree to meet on the date, times, location and conditions that the Community sets for the dialogue;

(d) Communicate with the Community members and leaders at the location of the Community, on all issues set out in Article 6.1 or as otherwise provided in the Agreement, in the local or preferred language(s) of the Community;

(e) Ensure the participation of women of the Community in all communication and negotiations with the Project Company;

(f) Negotiate and agree in good faith with the Community under the supervision of Local Government and approval of Central Government on the conditions that the Project Company has to fulfill to obtain and maintain the Consent;

(g) Translate each draft of the Agreement into the preferred local language of the Community and Spanish;

(h) Sign the Agreement with Community leaders in the presence of [number to be inserted] male and female members of the Community at the location of the Community;

(i) Review and agree with the Community members and leaders at the location of

the Community any subsequent changes needed to the Agreement after it has been executed under the supervision of Local Government and approval of Central Government as may be required during the life of the Project; and

(j) Schedule regular meetings with the Community, ensuring that a representative is present from Local Government for the purpose of reviewing compliance with the Agreement.

6.3 - Community right of assistance from third parties

The Project Company shall not impair the right of the Community to seek assistance for this procedure from third parties, such as state officials, professional advisors including lawyers and non-governmental organizations.

Article 7 – Breaches of the Agreement

7.1 - Notification of breach

7.1.1 The Community shall notify the Project Company in writing promptly if the Project Company has breached this Agreement. The Project Company shall appoint a community liaison officer or representative who shall be the person to whom any complaints by the Community must be addressed and sent. The Project Company must ensure that a community liaison officer or representative is engaged throughout the term of this Agreement. The Community may appoint its own representative(s) who will be responsible for notifying the Project Company of any breach, however, any member of the Community shall be entitled at all times to complain directly to the Project Company without reprisal or negative consequences attaching to that member of the Community as a result. *[Note: All members of the Community should have the right to complain to the Project Company to avoid any potential filtering of information by the Community's leadership and to reduce the possibility of any intimidation/coercion/corruption. This Article also recognizes that it is possible that a Project Company's community liaison team might change but what is important is that there is someone the Community can speak to at all times.]*

7.1.2 Any member of the Community is entitled to lodge his or her complaint in a public, central location including without limitation on [a physical or electronic bulletin board, website or by means of a hotline] whenever the Project Company breaches its obligations under this Agreement.

7.2 – Statute of limitations

Any member of the Community can notify the Project Company, Local Government and Central Government of any breach of this Agreement by the Project Company at any time. The Parties agree that no statute of limitations shall apply to any claim of the Community in respect of any breach by the Project Company which harms the environment, water, animals, health and any sacred place pertaining to the Community or otherwise creates long-term problems, the effects of which cannot necessarily be discovered or dis-

cerned earlier. The Parties agree that the existing statute of limitations regime under the relevant laws will apply to all other claims by the Community in respect of any other breach by the Project Company.

7.3 - Burden of proof

7.3.1 The burden of proof in respect of compliance with the terms of this Agreement is on the Project Company. Upon receipt of a notice from the Community that the Project Company is in breach under Article 7.1 above, the Project Company shall promptly provide evidence to the Community, Local Government and Central Government that it is not in breach of this Agreement. The Project Company must provide its explanation and evidence as to why it is not in breach of this Agreement to the Community within [5] days if the breach is minor and within [2] days if it is a Material Breach.

7.3.2 For the purposes of this Agreement, the burden of proving compliance with the terms of this Agreement, including any future amended versions of this Agreement, by the Project Company (in the event of notification of breach by the Community and otherwise at all times during the life of the Project and/or during the term of this Agreement) shall rest with the Project Company at all times. The Project Company also has the burden of proving non-compliance by the Community with any of its obligations under this Agreement. The Project Company's burden of proof extends to all foreseeable and unforeseeable impacts of the Project existing at the time of the Agreement or occurring in future.

7.4 - Liability

The Project Company is strictly liable for any breach of the obligations of this Agreement. The Project Company is strictly liable for any damage to the environment and specifically to the environment of the Community arising out of or in connection with the Project and at all times during the Project, whether or not arising out of an occurrence of force majeure, unless it can prove beyond a reasonable doubt that the damage did not arise from the Project and could not have been caused by the Project or prevented by the Project Company, such burden of proof shall extend to the activities which were undertaken by any predecessor company for which the Project Company is also liable.

7.5 - Breach

The Project Company will incur in a breach of this Agreement if it:

(a) damages the environment or water or harms any animals or harms any sacred place pertaining to the Community;

(b) makes a false statement to the Community, or provides misleading, incomplete or inaccurate information about the Project to the Community;

(c) commits a minor breach of this Agreement and fails to remedy that minor breach within the Remedy Period;

(d) commits any act of Corruption; and

(e) commits a Material Breach of this Agreement and fails to remedy it within the relevant Remedy Period.

7.6 - Remedy periods

Upon receipt of notification from the Community under Article 7.1, the Project Company shall remedy the following breaches within the following time periods:

(a) damage to water and the environment or harm to any animals or harm to any sac red place pertaining to the Community: immediately;

(b) for any other breach set out in Articles 7.5 (b) – (d): the Company shall have a period of 30 days from the date of notification of the breach under Article 7.1 above to either prove that the Project Company is not in breach of the Agreement or to cure the breach; and

(c) for any Material Breach: the Project Company shall have a period of 10 days from the date of notification of the breach under Article 7.1 above to either prove that the Project Company is not in material breach of the Agreement or to cure the breach.

7.7 - Consequence of breach

7.7.1 The Operations License shall be suspended for the duration of the breach by the Project Company of the terms of this Agreement.

7.7.2 The Project Company must do everything that is possible to remedy the breach as quickly as possible and in the case of a Material Breach where the Remedy Period has expired for that Material Breach, the Company must stop operations immediately upon expiry of the Remedy Period.

7.7.3 The Project Company must use the best and most advanced technical resources, processes and standards to remedy any breach, irrespective of the cost of those processes and standards, and shall give the highest priority to remedying any breach of this Agreement.

7.7.4 The Operations License shall be automatically revoked by the Central Government if the Project Company commits a breach of this Agreement under Articles 7.5 d and e.

7.7.5 In the event of any act of Corruption by any personnel employed by the Project Company, the Project Company shall be required to refund all profits earned from the first date the Corruption occurred up to and including the date the Corruption was discovered and thereafter in accordance with the *Ley de Pérdida de Dominio* (Extinction of Domain Law).

7.7.6 The Project Company shall continue to pay full salaries to its staff (including any members of the Community it employs) at all times including during any breach, remedying of any breach, any suspension of operations or any suspension of the Operations License. In the event of termination of operations and/or the License, the Project Company shall continue to pay full salaries to its staff for [X] years thereafter.

7.7.7 The Parent Company acknowledges that it is the ultimate beneficial owner of the Project and if it is not, the Parent Company and Project Company agree that they shall provide the Community with the identity of the ultimate beneficial owner within 10 days of execution of this Agreement and promptly should the ultimate beneficial owner change at any time during the term of this Agreement. The Parent Company shall if it is the ultimate beneficial owner in respect of the Project and if it is not, the Project Company and the Parent Company shall procure that the ultimate beneficial owner in respect of the Project shall recognize any Material Breach of this Agreement as a significant breach requiring disclosure to all stock exchanges on which the shares of the ultimate beneficial owner are listed. The Parent Company shall (if it is the ultimate beneficial owner) and if it is not, the Project Company and the Parent Company shall procure that the ultimate beneficial owner makes such disclosure to the relevant stock exchange(s) as soon as the Remedy Period has expired (without the Material Breach having been remedied) regardless of whether such stock exchange requires disclosure and regardless of whether the Project Company, Parent Company or ultimate beneficial owner consider the disclosure to be premature or not sufficiently material.

7.8 - Obligations during suspension or revocation of the Operations License

7.8.1 The suspension or revocation of the Operations License does not exempt the Project Company from the obligation to remedy breaches of this Agreement.

7.8.2 The termination or suspension of the Project due to suspension or revocation of the License does not exempt the Project Company from fully performing its obligations or fulfilling the conditions of this Agreement.

7.9 - Damages

The Community, and each member thereof, shall be compensated for any injury or damage suffered from any breach by the Project Company of any of its obligations under this Agreement. Such compensation shall at least restore the Community and any injured members of the Community to such position they would have been in had there been no breach and for all costs and expenses incurred by the Community. In addition, the Community and any injured members of the Community shall be compensated for any pain and suffering.

7.10 - Inspection

The Community shall have the right to inspect the local site of the Project at all times accompanied by third parties of its choosing including without limitation any representatives of Local Government or Central Government (e.g. non-governmental organizations, professional advisors including lawyers, government officials, members of other communities, and others).

7.11 - Security and freedoms of the Community

The Project Company is prohibited from hiring state police forces, whether local or na-

tional, for security purposes at any time. The Project Company shall respect the right of assembly and freedom of speech of the Community at all times.

7.12 – Social conflict

The Community is entitled to notify any of Local Government or Central Government and shall notify its autonomous local [Defensoría del Pueblo or equivalent authority] office, or any functionally equivalent office in future should the [Defensoría del Pueblo or equivalent authority] cease to exist, in the event that there is any social unrest arising out of or in connection with the Project including any major disputes between members or groups within the Community as to the Project or between members or groups within the Community and the Project Company as to the development of the Project.

Article 8 - Parent Company Guarantee

8.1 The Parent Company shall provide the parent company guarantee set out in Schedule 6 for the benefit of the Community, Local Government and Central Government.

8.2 The Parent Company if it is the ultimate beneficial owner in respect of the Project, or if not the Parent Company agrees to procure that the ultimate beneficial owner in respect of the Project shall register the fact of execution of this Agreement with every stock exchange where it is listed (if applicable) and a copy of this Agreement with each stock exchange if the stock exchange either requires it or has the capacity to record that Agreement.

Article 9 - Succession

9.1 The Project Company is obliged to ensure that the Agreement continues in full force and effect and fully binding on the Project Company, uninterrupted, if the Project Company transfers its obligations to a legal successor (such as in the case where the Project is sold, in whole or in part, to another company or if there is a change of control of the Project Company resulting in a New Company assuming its obligations or if the Project Company is restructured).

9.2 Any such transfer of rights and/or obligations must be in accordance with this Agreement, the Operations License, any land use agreements and other agreements that the Company has entered into with any members of the Community.

9.3 The Project Company as Exiting Company and the legal successor as New Company shall both be liable to the Project Company for any existing liabilities at the time of transfer from the Exiting Company to the New Company. The New Company must have at least the same financial and technical qualifications and resources as the Exiting Company. Both the Exiting and New Companies are liable at all times for any environmental damage arising out of or in connection with the Project.

Article 10 - Term of Agreement and Renewal

10.1 This Agreement takes effect on the date of signing of this Agreement and remains legal, valid, and binding for the term of the Operations License. Upon termination or expiry of the Operations License and this Agreement, the Project Company, or any other successor company that is operating the Project on closure of the mine in accordance with Article 9, is responsible for: (i) any environmental damage of which it has actual knowledge as of the date of termination and (ii) any environmental damage that has arisen out of or in connection with the Project up to (and including) the date of termination and (iii) any environmental damage that does arise out of in connection with the Project, no matter when arising.

10.2 The Project Company, or any successor company that is operating the Project on closure of the mine in accordance with Article 9, shall have uncapped liability in respect of any environmental damage arising out of or in connection with the Project.

Article 11 - Governing Law and Enforceability

11.1 This Agreement, including the validity and interpretation of this Agreement, and any non- contractual obligations arising out of or in connection with this Agreement shall be governed by the laws of [Insert Name of the Country].

11.2 This Agreement is a legally binding contract. Any disputes arising out of or in connection with this Agreement shall be subject to the exclusive jurisdiction of the courts of [Insert Name of the Country and specify if the courts that will have jurisdiction will be the Federal or Local courts]

11.3 This Agreement is not in conflict with any international and bilateral treaty or any other international agreement or instrument entered into by [Insert Name of the Country].

Article 12 - Language

12.1 The Project Company shall make the Agreement available, in Spanish and in the local preferred language(s) of the Community, to the Community and at the cost of the Project Company.

Article 13 - Amendment

13.1 Any amendment to this Agreement shall only be effective if such amendment is made in writing and duly signed by all [five] signatories (as per Execution Page) to this Agreement (and notarized as required by the relevant laws of the host country) and provided that any amendment must be supervised and approved by both Local Government and Central Government at all times.

13.2 All members of the Community must vote on any proposed amendment to this Agreement before it is executed, and the terms and implications of such amendment must be explained in full to all members of the Community by its legal advisors before it executes the amendment.

13.3 Any amendment entered into bilaterally between any member of the Community (including any leader of the community) or any leadership committee of the Community and the Project Company without the approval of the Community expressed by vote in accordance with Article 2.2(a) above shall be invalid.

Article 14 - Delegation

14.1 No right, privilege, or obligation under this Agreement may be assigned or transferred in whole or in part to a third party without the Consent of the Community, except

(a) In the case of succession under Article 9 of this Agreement; and

(b) In the case where one or more subcontractors are hired either to perform an obligation of the Project Company with respect to the Project generally in accordance with the Operations License or to perform an obligation of the Project Company generated by this Agreement; in which case such subcontractors are under the same obligations as the Project Company towards the Community and the environment.

The Project Company remains fully liable to the Community for its obligations under this Agreement in the event of any delegation to sub-contractors.

Article 15 - Publication of the Agreement

15.1 The Project Company shall make arrangements for a copy of this Agreement to be published in the following locations:

(a) in the Official Newspaper [Insert Name of the Official Newspaper] or any other newspaper that in the future becomes the official newspaper;

(b) [in the database on agreements between communities and companies of the [Insert Name of the Ministry]];

(c) in the principal church of the Community;

(d) in the local town hall or office of the Local Government;

(e) [in a database of local agreements maintained by the Local Government];

(f) at the office of the Project Company located within the geographical area of the Community;

(g) at the meeting place of the Community's leadership committee; and

(h) [on an electronic notice board, if available, in the Plaza de Armas of the Community].

15.2 The Project Company shall provide a hard copy of the Agreement to any member of the Community who requests a hard copy.

15.3 The Agreement shall be accessible by the public nationwide in the case of the Official Newspaper and the database on agreements between communities and companies of [Insert Name of the Ministry].

15.4 The Project Company and Local Government shall ensure that any copy of the Agreement that is available to the public under Article 15.1 (c) – (h) shall be available at all times without disruption, in both Spanish and the local preferred language(s) of the Community and that any publicly available copy of the Agreement shall be complete without omission, redaction or alteration.

15.5 If any of the Parent Company, Project Company or its workers have access to the Agreement, the Community should have equal access to the Agreement on exactly the same terms.

Article 16 - Documents that Form Part of the Agreement

16.1 Every Schedule to this Agreement forms part of this Agreement and is incorporated by reference into the terms of this Agreement and all the terms of the Schedules are binding on the Parties as operative terms.

EXECUTION PAGE

[Note: Two representatives from each organization must sign this Agreement].

FOR AND ON BEHALF OF THE COMMUNITY BOARD	FOR AND ON BEHALF OF THE COMMUNITY BOARD
FOR AND ON BEHALF OF THE PARENT COMPANY	FOR AND ON BEHALF OF THE PARENT COMPANY
FOR AND ON BEHALF OF THE PROJECT COMPANY	FOR AND ON BEHALF OF THE PROJECT COMPANY
FOR AND ON BEHALF OF THE LOCAL GOVERNMENT AND AGREEING AND ACKNOWLEDGING THE TERMS OF THIS AGREEMENT APPLICABLE TO THE LOCAL GOVERNMENT	FOR AND ON BEHALF OF THE LOCAL/REGIONAL GOVERNMENT AND AGREEING AND ACKNOWLEDGING THE TERMS OF THIS AGREEMENT APPLICABLE TO THE LOCAL/REGIONAL GOVERNMENT
FOR AND ON BEHALF OF THE CENTRAL GOVERNMENT AND AGREEING AND ACKNOWLEDGING THE TERMS OF THIS AGREEMENT APPLICABLE TO THE LOCAL GOVERNMENT	FOR AND ON BEHALF OF THE CENTRAL GOVERNMENT AND AGREEING AND ACKNOWLEDGING THE TERMS OF THIS AGREEMENT APPLICABLE TO THE LOCAL GOVERNMENT

SCHEDULE 1: PROJECT LOCATION AND GEOGRAPHICAL SCOPE

[Set out the location in detail, including a detailed map of the territory to be impacted by the Project]

SCHEDULE 2: PROJECT PROPOSAL AND SCOPE

[Project Proposal and Scope: The Project Company shall set out in detail the project proposal, scope and impact in the preferred local language(s) of the Community in tangible, easy to understand concepts and terminology so as to be understood by the members of the community.]

[Note: The Schedules to this Agreement should contain all information relevant to the Project in accordance with the provisions of the Agreement.]

SCHEDULE 3: SUSTAINABLE DEVELOPMENT PLAN

[Note: The below is a suggested framework for components of the Community's Sustainable Development Plan. Capstone 2021 team to flesh out the details of the below and the mechanics of how a tax credit system might fund some of the items below.]

The Project Company shall provide the following to the Community:

FUNDAMENTALS

(a) Clean drinking water 24 hours a day, 7 days a week.

(b) Hot and cold water 24 hours a day, 7 days a week.

(c) Fully functioning sewerage systems for the whole Community.

(d) Universal access to Electricity.

(e) To the extent not already provided under the relevant laws.

ENVIRONMENT

(a) Train Community members to understand EIAs, monitor compliance with EIAs, take samples, monitor contamination and liaise with representatives of the Project Company, Local Government and any non-governmental organizations as to contamination and how to remedy the contamination.

(b) Train Community members to be able to train other members of the Community about their own sustainable living i.e. recycling / non-polluting etc. ***[Note: Please refer to the environment section of the how-to-guide for the community for more guidance and thoughts in this area.]***

HEALTH

(a) A hospital near to the centre of the Community for members of the Community and workers at the Project site (tax credit project).

(b) Doctors and nurses to staff the hospital.

(c) Training for doctors and nurses.

(d) Local Government to continue operation of the hospital after the Project Company has completed the Project.

(e) Specific reproductive health services for women (maternal/reproductive health) and

children (malnutrition).

(f) Young medical professionals to be provided by Central Government or provided by a non- governmental organization with Project Company assistance and/or funding.

EDUCATION

(a) A school at close proximity to the centre of the Community (tax credit project).

(b) Education should be on an equal basis for both girls and boys.

(c) Professional teachers to be provided by the Central Government or provided by a non- governmental organization [Insert Relevant Authority: i.e Ensena Peru] with Project Company assistance and/or funding.

(d) Training for skilled jobs for all willing members of the Community.

(e) Education campaign to inspire young people to want to attend university.

(f) Educational scholarships for students with potential.

EMPLOYMENT

(a) Jobs in the Project Company throughout the life of the Project.

(b) Training in computer literacy and new technology.

(c) Advance training in skills needed for various stages of the Project.

(d) Training in how to farm sustainably in the new Project environment.

(e) Use local suppliers from the Community (if compliant with international law).

(f) Employment campaign to increase job prospects for women and to provide child-care for those women who want to work.

INFRASTRUCTURE

(a) Construction and maintenance of roads (tax credit project).

(b) Upkeep of urban areas - town squares and buildings (tax credit project).

(c) Bridges (tax credit project)

(d) Internet for everyone in the area impacted by the Project.

(e) Soccer field / basketball courts to maintain the physical health and wellbeing of the Community.

SCHEDULE 4: CONSENT REVIEW AND MAINTENANCE PROCEDURE

[This Schedule will delineate the review process through which Consent will periodically be reviewed and through which Consent can be maintained provided the Community agrees to continue to provide its Consent to the Project Company after each periodic review has been completed.]

REPRESENTION

(a) The review process will be led by representatives from the Community, the Project Company and Local Government.

(b) Each party will decide who will represent their interests during the review process. The Community will make the decision as to who will represent the interests of the Community during the review process democratically or through customary consensus. The Community must also ensure adequate gender and/or minority representation in whoever it elects to represent its interests.

REVIEW

(a) The Parties will review whether the Project Company has fully performed its obligations and fulfilled the conditions of the Consent granted to it by the Community by reference to and in accordance with the terms of the Agreement either during the period since (i) execution of the Agreement or (ii) the last review (as applicable). (b) Only if there is unanimous agreement amongst the members of the Community that the conditions of the Consent have been, and are continuing to be met, shall the Consent continue in force.

REVIEW PERIOD

(a) Pre-Engineering Schedule: During the exploration phase, the Consent will be subject to renewal on a [quarterly basis], that is, every [3] months.

(b) During and Post Engineering Schedule: During these periods, Consent will be subject to renewal on a bi-annual basis, that is, every [6] months.

ANY OTHER TERMS

(a) The Parties can stipulate any additional terms they may deem necessary and can mutually agree upon with regards to how Consent should be reviewed and maintained.

[Note: Capstone 2021 team to create detailed consent review and maintenance procedure here].

SCHEDULE 5: CONSENT RENEWAL PROCEDURE

Once Consent is lost, and trust in the Project is jeopardized, the Parties will determine the process through which Consent can be regained. There are six principles that should guide this:

(a) The original breach must be remedied before the renewal process can be initiated.

(b) The Project will be halted until the original breach is remedied, and until Consent is renewed.

(c) The conditions of any renewed Consent may be stricter and more demanding on the Project Company than the original Consent. This includes, but is not limited to, additional contributions to the Social Wealth Trust Fund and the Internal Emergency Fund.

(d) Additional Community benefit projects may be negotiated in order to obtain renewed Consent from the Community by way of enhancement of the Social Wealth Trust Fund.

(e) Any renewal of Consent must be determined by the Community, either democratically or through customary consensus.

(f) Any renewal of Consent process must ensure all party participation mechanisms which must ensure that all members of the Community have the opportunity to participate in the renewal of Consent process.]

[Note: Capstone 2021 team to develop in more detail.]

SCHEDULE 6: PARENT COMPANY GUARANTEE

NOW, THEREFORE, the Parties mutually agree to the following terms:

Article 1. Definitions

Capitalized terms used and not otherwise defined herein shall have the meanings as set out in the Agreement. In addition, the following terms shall have the following meanings in this Parent Company Guarantee:

1.1 "Affiliates" shall mean a person or entity that directly or indirectly controls, is controlled by, or is under common control with, another person or entity.

1.2 "Agreement" shall mean the Community Partnership Agreement, of which this Guarantee forms part, entered into by the Community, the Guarantor, Local Government, Central Government and the Project Company.

1.3 "Central Government" shall have the meaning given to that term in the Parties section of the Agreement.

1.4 "Community" shall have the meaning given to that term in the Parties section of the Agreement.

1.5 "Demand" shall have the meaning given to it in Section 5 of this Guarantee.

1.6 "Government" shall mean either Central Government or Local Government or both of them together, as applicable.

1.7 "Guarantee" shall mean this Parent Company Guarantee.

1.8 "Guaranteed Obligations" shall mean each and every obligation of the Project Company under the Agreement of whatever nature, including any financial and performance obligations and any liabilities.

1.9 "Guarantor" shall have the meaning given to the term Parent Company in the Parties section of the Agreement.

1.10 "Local Government" shall have the meaning given to that term in the Parties section of the Agreement.

1.11 "Longstop Date" shall have the meaning given to that term in Section 7 of this Guarantee.

1.12 "Project Company" shall have the meaning given to that term in the Parties section of the Agreement.

1.13 "Parties" shall mean the Government, the Community and the Guarantor together.

Article 2. Guarantor as Primary Obligor

2.1 The Guarantor undertakes to give this Guarantee as a primary obligor and not only as a surety and hereby unconditionally, irrevocably and continuously guarantees to the Community and the Government the full and prompt performance and payment, each when due, of the Guaranteed Obligations.

2.2 The Guarantor shall make available to the Project Company all necessary financial and other resources that the Project Company may require to meet and satisfy, on a timely basis, the due and punctual performance and payment of the Project Company's obligations under the Agreement.

2.3 The Guarantor accepts liability for any and all failures, including omissions, by the Project Company to comply with the Guaranteed Obligations. In the event that the Project Company fails, in whole or in part, or delays the prompt payment of any or all amount(s) to the Community and/or the Government (as applicable) under the Agreement, the Guarantor agrees to cause or itself make the payment of such amounts to be made promptly and punctually when and as such amounts under the Agreement become due and/or payable as if such amounts were paid by the Project Company when and as due and/or payable under the Agreement. The Guarantor agrees that if receipt by the Community and/or the Government (as applicable) of any payment due and/or payable under this Guarantee should be hindered for any reason whatsoever, the Guarantor shall, at the Community's sole discretion, make such payment in escrow and the Community shall be the sole beneficiary of such payment or hold the payment on trust for the sole benefit of the Community and not to be applied for any other purpose.

2.4 Each of the Community and/or Government may opt to exercise its rights against the Guarantor without exercising any of its rights against the Project Company, in which case the Guarantor shall be held wholly liable for the Guaranteed Obligations.

Article 3 - Notice

3.1 Each of the Community and the Government agrees to give the Guarantor prior written notice of any claim under the Agreement concurrently with making any Demand to the Guarantor in respect of the Guarantor's obligations under this Guarantee, and the Guarantor agrees that such notification obligation shall be the exclusive and only obligation of the Community and the Government to the Guarantor in respect of any claim under the Agreement.

Article 4 - Notice Guarantor's Representations and Warranties

4.1 The Guarantor agrees that the Guaranteed Obligations shall be fulfilled and satisfied in accordance with the terms and provisions of this Guarantee, regardless of any right, provision, law, decree, or other authority having the force of law now or hereafter in effect which might in any manner affect the Guaranteed Obligations, or the rights on the part

of the Community or the Government with respect thereto, as against the Guarantor.

4.2 The Guarantor represents and warrants to the Community and the Government that any of the Guaranteed Obligations of the Guarantor in this Guarantee are several, are binding (including on any successor, transferee or assignee of the Guarantor), and are enforceable in accordance with its terms.

4.3 In connection with this undertaking, the Guarantor represents and warrants to the Community and the Government that:

(a) The Guarantor is a corporation duly organized, validly existing and in good standing under the laws of its jurisdiction of organization, specifically [INSERT JURISDICTION] and that the Project Company is its direct, wholly-owned subsidiary;

(b) The Guarantor is duly qualified in all respects to conduct business and is in good standing in each jurisdiction or place in which it conducts business and where its principal place of business and registered offices are located;

(c) The Guarantor has the requisite corporate and financial power and authority to execute and deliver this Guarantee and perform all the Guaranteed Obligations in accordance with their terms under the Agreement;

(d) Each of the execution, delivery and performance of this Guarantee has been duly authorized by all necessary corporate action;

(e) The Guarantor does not require the acceptance of an agent or other third party for valid execution of this Guarantee;

(f) There are no pending or threatened actions or proceedings by or before any court or administrative agency or authority which may adversely affect the financial condition or operations of the Guarantor or the Project Company;

(g) This Guarantee constitutes the legal, valid and binding obligation of the Guarantor, enforceable against the Guarantor in accordance with its terms, and does not require registration of any kind;

(h) The Guarantor has maintained and shall maintain throughout the term of this Guarantee all permits, licenses, registrations and other forms of governmental authorization and approval as required by and in accordance with all applicable laws in order for the Guarantor to execute and deliver the Guarantee, including any obligations of the Guarantor contained herein, and for the Guarantor to perform the obligations of the Guarantor in accordance with its terms under this Guarantee in accordance with all applicable laws;

(i) The performance of any Guaranteed Obligations under this Guarantee and/or the execution of this Guarantee is not and shall not be in violation of or be a default under or in conflict with any term of the Guarantor's articles of incorporation and

by-laws or any material obligation that the Guarantor may have to a third party and shall not violate or contravene any authority having the force of law or any indenture, agreement, or other instrument to which the Guarantor or any of the properties or assets of the Guarantor is or may be bound.

Article 5 - Waivers of Guarantor

5.1 The Guarantor acknowledges and agrees that it has no rights under any bilateral or multilateral agreement or treaty other than the rights that the Project Company may have under that bilateral treaty (if any) between the jurisdiction of the Project Company's incorporation and [Insert Relevant Jurisdiction: i.e Peru] and cannot claim the benefit of any such bilateral or multilateral agreement.

5.2 The Guarantor waives any and all benefits of diligence, presentment, and demand of payment.

5.3 The Guarantor waives any requirement that the Community or Government is obliged to (i) protect, secure, perfect or insure any security interest in or other lien on any property subject thereto belonging to the Project Company or (ii) exhaust any right or take any action against the Project Company, or any collateral, or (iii) file any claims with a court in the event of dissolution, receivership, assignment for the benefit of creditors, insolvency, or bankruptcy, or reorganization, rearrangement, composition or readjustment, or other similar proceedings affecting status, existence, assets or obligations, or the merger or consolidation into or with any corporation involving the Guarantor and/or the Project Company.

5.4 The Guarantor waives to the fullest extent permitted by applicable law all applicable exemption rights.

5.5 The Guarantor expressly waives any subrogation or assignment of any of the Guarantor's obligations under this Guarantee.

5.6 The Guarantor waives notice of acceptance of this Guarantee, any requirement of diligence or promptness on the part of the Community or the Government in the enforcement of any obligation of the Guarantor under this Guarantee or applicable law, and any and all notices of any kind and description which may be required to be given by any statute or rule of law.

5.7 The Guarantor agrees not to take advantage of any right, statute, regulation, decree, or other authority having the force of law now or hereafter in effect in any jurisdiction which right, statute, regulation, decree, or other authority might otherwise permit the Guarantor to modify or affect in any manner its obligations under this Guarantee.

5.8 The Guarantor agrees not to invoke, or cause or permit to be invoked, any defense resulting from any alteration in the time, amount, currency, or other manner of payment by the Project Company of all or any part thereof or of fulfillment of any obligation of the Project Company under the Agreement which might, in any manner, otherwise constitute

a legal or equitable discharge.

Article 6 - Guarantor's Liability

6.1 The Guarantor shall pay upon Demand and presentation of invoices all costs and expenses paid or incurred by the Community and/or the Government in connection with the enforcement of any obligation of the Guarantor under this Guarantee, including, without limitation, fees and expenses of counsel.

6.2 The liability of the Guarantor hereunder is irrevocable, continuing, absolute and unconditional and the obligations of the Guarantor hereunder shall not be discharged or impaired or otherwise affected by, and the Guarantor hereby irrevocably waives any defenses to enforcement it may have (now or in the future) by reason of:

(a) any illegality or lack of validity or enforceability of any Guaranteed Obligation, the Agreement, the Operations License and any related agreement or instrument;

(b) any change in the time, place or manner of payment or performance of, or in any other term of, the Guaranteed Obligations or any other obligation of any party under the Agreement, or any rescission, waiver, amendment or other modification of the Agreement or any other agreement, including any increase in the Guaranteed Obligations;

(c) any taking, failure to take, exchange, substitution, release, impairment or non-perfection of any collateral, or any taking, failure to take, release, reduction, impairment, amendment, waiver or other modification of any guarantee, for the Guaranteed Obligations;

(d) any default, failure or delay, willful or otherwise, in the performance of the Guaranteed Obligations;

(e) any change, restructuring or termination of the corporate structure, ownership or existence of the Project Company or any of its Affiliates or any insolvency, bankruptcy, reorganization or other similar proceeding affecting the Project Company or any of its Affiliates or its assets or any resulting release or discharge of any obligation; or

(f) the failure of the Community and/or the Government to assert any claim or demand or to exercise or enforce any right or remedy against any Person under the Guaranteed Obligations or otherwise.

Article 7 - Guaranteed Obligations to Stand

7.1 Any Guaranteed Obligation shall survive termination or expiration of the Agreement.

7.2 This Guarantee is irrevocable and unconditional and shall remain in full force and effect until the earlier of the date that:

(a) all of the Guaranteed Obligations are fully and irrevocably satisfied and discharged;

(b) or; five (5) years following termination of the Agreement (the "Longstop Date").

7.3 The Guarantor's obligations under this Guarantee shall be independent and absolute, and the Guarantor shall have no right of set-off or counterclaim with respect to any other claims it may have against the Community, Government or any other Person.

7.4 All of the Guaranteed Obligations shall bind the Guarantor and its successors, transferees and permitted assigns. The Guarantor may not assign or delegate its duties hereunder without the prior written consent of the Community and the Government, and any purported assignment or delegation without such consent shall be null and void. The Guarantor confirms that any assignee of the Community and/or the Government under the Agreement may exercise all rights and remedies of the Community and/or the Government under this Guarantee. No other person or entity shall be a beneficiary of this Guarantee or have or acquire any rights by reason of this Guarantee.

7.5 The Guarantor agrees that the Guaranteed Obligations are, shall be and shall remain, unaffected by:

(a) the validity, regularity, or enforceability of the obligations of the Project Company under the Agreement;

(b) the absence of any action or judgment to enforce the Guarantor's obligations to the Community and the Government under this Guarantee;

(c) the absence of any action or judgment to enforce any Guaranteed Obligations by the Community, the Government or the Project Company;

(d) the dissolution, the receivership, the insolvency, the bankruptcy, the assignment for the benefit of creditors, the reorganization, the arrangement, the composition or the readjustment, or other similar proceedings affecting status, existence, assets or obligations, or the merger or the consolidation into or with any corporation of the Guarantor or the Project Company;

(e) any sale or transfer by the Guarantor or the Project Company of all or any part of its property or assets;

(f) the transfer, whether by operation of law or otherwise of all or any part of the interest of the Guarantor in the Project Company;

(g) any increase in or partial release, extension in time or modification of any obligation of the Project Company to the Community and/or the Government under the Agreement;

(h) any other circumstance, including, but not limited to, any counterclaim or other defense by the Guarantor under this Guarantee against the Community and/or the Government, which might otherwise constitute a legal or equitable discharge or

defense of a guarantor or surety under applicable laws; and

(i) any other circumstance whatsoever which may or might in any manner vary the risks of the Guarantor and/or may or might otherwise constitute a legal or equitable-discharge of a guarantor or surety, it being the purpose and intent of this Guarantee that, subject to the express provisions of this Guarantee, the Guarantee and Guaranteed Obligations of the Guarantor shall not be discharged except by payment and performance as herein provided and that a claim by the Community and/or the Government against the Guarantor under this Guarantee shall not be limited by reason of the fact that said claim by the Government may be limited by any right, provision, statute, regulation, decree, or other authority having the force of law.

(j) In the event that any payment to the Community in respect of any amounts due by the Project Company under the Agreement is rescinded or must otherwise be returned by the Community to the Project Company for any reason whatsoever, the Guarantor shall, irrespective of the foregoing, remain responsible and liable to the Community for such amounts to the extent provided herein as if such amounts had initially not been paid by the Project Company. The Guarantor covenants that the Guarantor's obligations under this Guarantee shall not be discharged except by payment of the amounts due by the Guarantor.

(l) This Guarantee shall continue to be effective or shall be reinstated, as the case may be, if at any time payment, or any part thereof, or any Guaranteed Obligation is rescinded or must otherwise be restored or returned by the Community and/or Government upon the insolvency, bankruptcy, or organization of the Project Company or the Guarantor or otherwise, all as though such payment had not been made.

Article 8 - Community's and Government's Obligations to Guarantor

8.1 To invoke its right to the payment and performance of any Guaranteed Obligation following the Project Company's default in the performance of the Guaranteed Obligation when due, the Community and/or the Government shall provide the Guarantor with a written demand (the "Demand") that:

(a) makes specific reference to this Guarantee;

(b) states the relevant Guaranteed Obligation(s);

(c) states that the Project Company has not performed the specified Guaranteed Obligation(s);

(d) where applicable, specifies the amount(s) of such Guaranteed Obligation(s) or the date(s) on which such Guaranteed Obligation(s) were due to be performed; and

(e) is delivered to the Guarantor on or before the Longstop Date.

8.2 After the Community and/or Government has received indefensible payment in full

in cash of all Guaranteed Obligations for which it has issued a Demand, it shall, at the Guarantor's request and expense, execute and deliver to the Guarantor, without recourse or representation or warranty, appropriate documents necessary to evidence the transfer by subrogation to the Guarantor of the Community or Government's interest in any insurance proceeds in respect of such Guaranteed Obligations.

8.3 If a Demand is delivered to the Guarantor that requires the performance of non-monetary Guaranteed Obligations, the Government shall provide to the Guarantor (or any subcontractor approved by the Government) permits that are required to conduct that part of the Project associated with such Guaranteed Obligations, subject to fulfillment of reasonable and customary requirements for the grant of such permits.

Article 9 - Amendments to the Agreement

9.1 The Guarantor expressly agrees that the Project Company may make and enter into amendments, modifications and changes to the Agreement without the approval or notification of the Guarantor, and to any and all actions, omissions or forbearances of any character of whatsoever which may be taken, or omitted, by the Project Company and/or the Community and/or the Government under and pursuant to the Agreement without notice to or consent of the Guarantor.

Article 10 - Amendments to the Guarantee

10.1 No amendment or modification of this Guarantee shall be effective unless in writing and signed by the Guarantor and accepted by the Community and the Government.

Article 11 - Non-waiver by the Community and/or Government

11.1 No act or omission of any kind on the part of the Community and/or Government including, but not limited to, any failure or omission to enforce any right or power conferred by the Agreement, in whole or in part, or any waiver of any covenant or condition herein set forth on any default or any exchange, release, surrender and/or other disposition of any collateral or any other security which may be held in connection with the Agreement, shall in any event affect or impair this Guarantee, nor shall the same be affected by any change in or loss of legal status by the Community, the Government, the Guarantor, or the Project Company.

11.2 The Guarantor agrees that if fulfillment of any obligation of the Project Company to the Government and/or Community is or would be subject to any prior action or omission, including, but not limited to, any performance or non-performance related to the Agreement, or otherwise, of any third party, the Guarantor shall, at the Guarantor's own cost and expense, be obligated to cause such third party to so act or omit, and the Guarantor shall concurrently fulfill the obligation to the Government and/or the Community.

Article 12 - Governing Law

12.1 This Guarantee and any non-contractual obligations arising out of or in connection with this Guarantee shall be governed and construed in accordance with [Insert Relevant Jurisdiction: i.e Peruvian] Law without giving effect to any conflict of laws provisions and the Guarantor hereby submits to the jurisdiction of the courts of [Insert Relevant Jurisdiction: i.e Peru] and appoints the Project Company at _____ its agent for service of process.

Article 13 – Notices

13.1 All notices, demands, instructions, waivers, consents or other communications hereunder shall be in writing in the English language and deemed to have been properly effective upon receipt, and shall be sent by personal delivery, courier, first class mail or fax to the following addresses:

Guarantor: [Insert required information] Central Government: [Insert required information] Local Government: [Insert required information] Community: [Insert required information]

13.2 The addresses and fax numbers by either Party to this Guarantee for notices given pursuant to this Guarantee may be changed by means of written notice to the other Party at least fourteen (14) Days prior to the effective date of such change.